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# THE ULTIMATE NIKON SLR HANDBOOK Volume 4

**W**ith hi-tech SLRs suitable for enthusiasts to the most demanding professional, Nikon has long been one of the most sought-after brands by serious photographers. These interchangeable-lens cameras enable you to really take control of your photography, but getting great images from these sophisticated tools means far more than pressing the shutter and hoping for the best. You need to know what to do with the array of dials, menu options and info-packed displays.

*The Ultimate Nikon SLR Handbook* is the instruction manual that should have come in the box.

We don't just tell you what the buttons do – we show you how to use them to get great pictures! And now, in Volume 4, we'll help you take your photography to the next level.

We begin with our in-depth SLR Techniques chapter, packed with top Nikon pro photos and tips that we guarantee will inspire you. Next, in Nikon Skills, are ten fantastic photo projects to try, backed up with pop-out video guides.

Chapter 3's Make Cash With Your Nikon section is full of expert advice on how to make money from you hobby. Chapter 4 contains our popular Nikopedia, with expert advice from prolific author Michael Freeman covering everything from perfecting your focusing to composition and post-shoot tips. And in Chapter 5 we've tested essential Nikon SLRs, lenses and kit to help you make an informed decision about what to buy next!



## WATCH THE VIDEOS

Turn to chapter three: Nikon software on page 76 and tap the 'Watch the video' links to watch the accompanying video guides



Chris

Chris George, Series Editor

A **Photo**masterclass  
from the makers of **NPhoto**

# THE ULTIMATE NIKON SLR HANDBOOK Volume 4

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# SLR TECHNIQUES



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[ NIKON ESSENTIALS ]

# THE ULTIMATE PRE-SHOOT CHECKLIST!

Setting up your Nikon before you start shooting can save you time, effort and maybe even using the wrong setting. Here's our essential guide to setting up your Nikon in advance for 10 of the most common subjects and situations

**W**ith all of the settings available on your Nikon, thinking about every one every time you shoot isn't the best approach to getting great images. If only there were a shortcut to setting up your SLR for any subject. Well, there is – as long as you know what type of subject you will be shooting, we can help.

There are lots of things that you can pre-set so you don't have to worry about them when you start shooting. This will give you more time to focus on the settings that you will need to change on

the day, and will ultimately result in more successful images.

Setting up your Nikon in advance will enable you to think about the more creative decisions involved in taking a picture, such as composition, rather than which exposure mode to choose.

We can't be by your side every time you shoot, so we've come up with a checklist of settings you *do* need to concentrate on while you're shooting, and which you can set up in advance, for ten different shooting situations – plus a few more hints and tips to help you along the way...



## [ SITUATION ONE ]

HAND-HELD  
LANDSCAPES

There's usually no hurry with landscapes, but preparation can free your creative side

**W**hile you might think you have plenty of time to change the settings on your Nikon when shooting landscapes, it can still be a good habit to have it pre-set to help you concentrate on the really important things when you're on location.

## THINGS YOU CAN PRE-SET

The settings you use for shooting landscapes handheld are different to those that you would use when using a tripod. The main thing you need to consider is the shutter speed dropping too low, as this increases the risk of camera shake.

That said, although the shutter speed is a concern, it's still best to set your Nikon to aperture-priority mode, as the aim in most landscapes is to keep the whole scene sharp. If you're shooting hand-held, you will need to set an aperture like f/8 or f/11, which is a good compromise between getting enough depth of field to keep the scene sharp from front to back, while still being able to set a fast enough shutter speed to shoot handheld (you can increase the ISO to enable faster shutter speeds, but with landscapes, where detail is everything, it's best to keep the ISO as low as possible to maximise image quality, and to avoid unwanted noise, or banding in large areas of smooth tones, such as skies).

Setting the ISO to 200 will enable you to shoot hand-held in most daylight conditions. If your lens has a vibration reduction (VR) feature, it's worth turning this one when hand-holding, too.

For most hand-held landscape shots you can set the focus mode to single-servo (AF-S), and the focus area to single point, as your subject will be static. Set your Nikon's drive mode to single shot too. Finally, you'll get more consistent colours by selecting daylight white balance rather than the automatic setting.

## SETTINGS TO CHANGE ON THE DAY

No matter how much you prepare your Nikon in advance, the light on a landscape can never be predicted, so you may need to adjust the exposure set by the camera. In aperture-priority mode you can do this by pressing the exposure compensation button,

and using the rear dial to increase or reduce the exposure (in other words, to lighten or darken your image). In aperture-priority mode the aperture (in this case f/8 or f/11) will stay unchanged, but the shutter speed will change, increasing to let in less light and so darken the exposure, or decreasing to let in more light and brighten up the exposure.

When it comes to keeping the whole scene sharp, you'll need to move the AF point to an area of the scene that is around a third of the way between the closest subject you want sharp and the most distant one. Take a test shot and check the sharpness by zooming in on the image on the LCD. If the subjects in the far distance aren't sharp you may need greater depth of field than is available at f/8.

Try setting the aperture to f/13 or even f/16, but do remember to keep an eye on the shutter speed. If this drops below 1/30 sec when using, say, an 18mm lens on a DX camera (28mm on FX), you may need to raise the ISO to enable you to use a faster shutter speed to prevent camera shake. If your lens has Vibration Reduction, you might get away with 1/15 sec or even 1/8, but if you go this slow, steady yourself as much as possible, and take a test shot to check sharpness.

SETTINGS  
CHECKLIST FOR  
LANDSCAPES

## FILE FORMAT

RAW

## EXPOSURE MODE

Aperture-priority

## APERTURE

f/8

## ISO

200

## SHUTTER SPEED

Set by camera

## FOCUS MODE

Single-servo

## DRIVE MODE

Single shot

## WHITE BALANCE

Daylight

“WHEN SHOOTING HANDHELD, THE MAIN THING YOU NEED TO CONSIDER IS THE SHUTTER SPEED DROPPING TOO LOW, AS THIS INCREASES THE RISK OF CAMERA SHAKE...”

## SET MIRROR LOCK-UP

Instead of using single-shot drive mode, many Nikon models have a mirror lock-up (Mup) mode to help minimise any chance of camera shake when using a tripod. In this mode you press the shutter release (ideally on a remote release) just once to flip the mirror up, and after waiting a couple of seconds for any vibration to fade, you press it again to take your shot.

## AVOIDING CAMERA SHAKE

Even when using shutter speeds faster than 1/30 sec, camera shake can still affect your shots. Try shooting from a kneeling position to help to stabilise your camera, or if you are standing, look for a solid object such as a tree, wall or rock to lean against to steady yourself.







## [ SITUATION TWO ]

## LONG-EXPOSURE LANDSCAPES

If you're planning to capture the sunrise or sunset, you don't want to waste any of your time on location faffing around with camera settings

**T**he settings you need to shoot sunrises and sunsets are similar to those for other landscapes, but as the light can change quickly, pre-setting the key controls will help you get the best results.

## THINGS YOU CAN PRE-SET

It's best to set your Nikon to manual mode to get the best results in the challenging lighting conditions of sunrise or sunset. You can also pre-set a small aperture, as this will give you a large depth of field – but not too small, or you run the risk of lens diffraction softening your shots. Around f/16 is a good starting point.

One reason for shooting at sunset is to capture the warmer light, so even if you're shooting in RAW, it's best to set the white balance on your Nikon to daylight, rather than automatic, as the latter will try to

## TYPICAL SETTINGS FOR SUNRISE AND SUNSET

## FILE FORMAT

RAW

## EXPOSURE MODE

Manual

## APERTURE

f/16

## ISO

100

## SHUTTER SPEED

Slower than 1/30 sec

## FOCUS MODE

Manual

## DRIVE MODE

Single shot

## WHITE BALANCE

Daylight

neutralise the warm colour cast. You may need to change this on location to the cloudy or shade setting, though, depending on the lighting that you encounter – or in RAW software later on.

You'll want to set the ISO to 100 or 200 to get the best image quality, although this will mean you'll have to use a slow shutter speed. As such, a tripod and remote release are essential for this type of shot. When you are using a tripod, turn off vibration reduction to prevent it activating when the camera is fired, as this can cause the image to be blurred. The autofocus will struggle in the low light conditions, so select manual focus.

## SETTINGS TO CHANGE ON THE DAY

Setting the best exposure is the biggest challenge when shooting at sunrise or sunset. As the sky is much brighter than

the landscape, it's difficult to keep detail in both in a single shot: expose for the sky and the landscape will be too dark; expose for the landscape and the sky will be blown out. You either have to find a compromise, or attach a graduated neutral density filter to darken the brighter sky, and reveal colour without it affecting the landscape, or you can take two exposures (one for the sky and one for the landscape) and merge them in Photoshop.

Your composition will also have an effect on the exposure indicated by the metering of your Nikon. If you include large expanses of bright sky or the sun in the frame, Nikon's Matrix metering system will, by default, recommend an exposure that will expose the sky as an average mid-tone, and so will under-expose the foreground or landscape.

Also, when changing the exposure for landscapes, avoid changing the aperture, as this will affect the depth of field. Instead set a slower shutter speed to adjust the exposure, while keeping ISO at 100 or 200.

When the landscape isn't lit directly by the sun you can find that the colours look too cool. In this situation, you can change white balance to cloudy or shade to warm things up, but do check that this doesn't make the colours in the sky or clouds look too warm.

# SLR TECHNIQUES

## [ SITUATION THREE ]

# WINDOW-LIT PORTRAITS

Get your camera ready to shoot in some of the most flattering light available!

**S**peed and connecting with the subject are the keys to capturing great people shots. This means that the fewer settings you have to think about while you're shooting, the better chance you have of getting the perfect portrait. While you'll usually have more control over the conditions when shooting indoors, that's no reason to go in unprepared.

### THINGS YOU CAN PRE-SET

Having your camera set up so you can get shooting straight away will also make the whole process more enjoyable for your subject, as even a professional model will get bored while waiting for you to get ready, and this can show in their expressions and attitude to the shoot.

As with most portraits, getting the right depth of field is the key to successful indoor portraits, so start by setting your camera to aperture-priority mode, and selecting a wide aperture such as f/2.8 or f/4. This will produce a shallow depth of field, to help blur details in the background, which can often be distracting when shooting indoors. Even though aperture is the most important setting, you also need to use a shutter speed fast enough to avoid blur from both camera shake and subject movement. As such, it's worth pre-setting a high ISO, say around 800, for most window-lit portraits – although you may have to increase this further still when shooting in low light.

Once you've pre-set the aperture and ISO you can turn your attention to focusing. For most indoor portraits you can set your Nikon to single-servo autofocus mode, and then select the single-point area mode. This will allow you to move the focus point to correspond to the face – specifically, whenever possible, the eye – of the subject by using the rear control pad.

“GETTING THE RIGHT DEPTH OF FIELD IS THE KEY TO SUCCESSFUL INDOOR PORTRAITS, SO START BY SETTING YOUR CAMERA TO APERTURE-PRIORITY MODE AND SELECTING A WIDE APERTURE”

## TYPICAL SETTINGS FOR WINDOW-LIT PORTRAITS

### FILE FORMAT

RAW

### EXPOSURE MODE

Aperture-priority

### APERTURE

f/2.8 or wider

### ISO 800 or higher

### SHUTTER SPEED

1/125 sec or faster

### FOCUS MODE

Single servo

### DRIVE MODE

Single shot

### WHITE BALANCE

Automatic

### REFLECTORS

If you are shooting with a light source such as a window behind the subject you can end up with their face in shadow. In these circumstances, use a reflector to bounce light back onto the subject. This is much simpler and more flattering than using flash.



## SETTINGS TO CHANGE ON THE DAY

Even though the autofocus system in most Nikons will get accurate results in most conditions, if you're taking photographs in a dark room it may struggle to focus successfully. If this is the case you'll need to switch to manual focus, and carefully focus on the eye or face of your subject.

You should also check the shutter speed that the camera sets, and if it's 1/60 sec or slower you may need to increase the ISO to enable you to use a faster shutter speed and thus avoid camera shake.

While you are checking the ISO and shutter speed it's also worth checking the exposure on your subject, as this can be affected by the brightness of the area behind. If the background is in shadow it will cause the camera to over-expose the subject, so in that case you should set exposure compensation to -1. If the background is much brighter than the subject it will cause the portrait to be under-exposed, so you'll need to set the exposure compensation to a positive value.

### FILL-IN FLASH

Shooting in bright sunlight can produce harsh shadows on faces, so try using flash to reduce them. The easiest way to do this is to set the flash to TTL automatic exposure, which will adjust its power automatically. Use exposure compensation to adjust the overall exposure.



## [ SITUATION FOUR ]

## OUTDOOR PORTRAITS

While variable lighting conditions can present challenges, you can still set up your camera in advance

**E**ven though you can't predict the exact lighting conditions that you'll be working in when you plan a shoot outdoors, having some basic settings pre-set on your Nikon will help with your outdoor portrait shots.

## THINGS YOU CAN PRE-SET

For most outdoor portraits you'll find that ISO200 will give you high-quality images, and still enable you to use a shutter speed fast enough to avoid blur from camera shake or subject movement.

Just like when you're taking window-lit portraits, you should set your Nikon to aperture-priority mode as this will give you complete control over the depth of field. Using a wide aperture such as f/2.8 will help to blur the background, while a narrower aperture such as f/8 will keep more of the scene sharp. For most portraits you will want

to blur the background, so you can set the aperture to f/2.8 or f/4, although you may need to adjust this when you are shooting to give more or less depth of field.

As long as the subject isn't likely to be moving around you should set the focusing mode to single-servo, and select the single-point area mode. Then, all you need to do on the day is position the focus point over the face or eyes of your subject.

## SETTINGS TO CHANGE ON THE DAY

If you position your subject to the left or right of your frame during your shoot, you may find that you can't select an AF point that corresponds to their position within the frame. In these situations you will need to either switch to manual focus, or use focus lock. In AF-S focus mode, all you need to do to use focus lock is position the subject so they're in the selected focus point area, then press the shutter release half-way until the focus indicator appears in the viewfinder. Then, while still half-pressing the shutter release, recompose your shot and fully press the shutter release to take your shot.

You may also need to adjust the exposure, depending on the lighting conditions that you find yourself shooting in. In darker conditions you may need to increase the ISO to enable you to set a shutter speed fast enough to avoid camera shake, and blur from subject movement. You will also need to set some exposure compensation if there is a light or dark background: if the background is much darker than the subject you will need to set exposure compensation to a negative value, such as -1, to avoid the subject being over-exposed, while if it's brighter than the subject you should use a positive value, such as +1, or everything will come out dark.

## TYPICAL SETTINGS FOR WINDOW-LIT PORTRAITS

**FILE FORMAT**  
RAW  
**EXPOSURE MODE**  
Aperture-priority  
**APERTURE** f/4  
**ISO** 200  
**SHUTTER SPEED**  
1/200 sec  
**FOCUS MODE**  
Single servo  
**DRIVE MODE**  
Single shot  
**WHITE BALANCE**  
Daylight

“USING A WIDE APERTURE SUCH AS f/2.8 WILL HELP TO BLUR THE BACKGROUND, WHILE A NARROWER APERTURE SUCH AS f/8 WILL KEEP MORE OF THE SCENE SHARP”

# SLR TECHNIQUES

[ SITUATION FIVE ]

## STUDIO FLASH

You can pre-set a great deal when you've got full control over shooting conditions

Using flash as your only light source means that the colour and lighting effects are much more controllable and consistent than they are when using a natural light source such as sunlight. This means that you can confidently pre-set many of the settings on your Nikon.

### THINGS YOU CAN PRE-SET

When you're using studio flash as your only light source you have to use manual mode, as none of the automatic exposure modes will work with studio flash. Once you've selected manual mode you can also set the shutter speed to the fastest flash sync speed available on your Nikon. This varies according to the model, but for most Nikons it's 1/200 sec (although some models, such as the D810 and D4s, allow you to use shutter speeds as high as 1/250 sec).

You can also set the aperture to a middle value such as f/8, even if you may need to adjust this on the day for either different depth-of-field effects or to adjust the overall exposure. Using studio flash you would normally use a low ISO, so you can pre-set this to ISO100, and also set the file format to RAW for the best quality.

Next, you need to select the right focusing mode for your subject. For static subjects you could use manual focus mode, and even position your camera on a tripod. For moving subjects, such as when shooting portraits, you can use either single or continuous servo autofocus, though you'll need to make sure that there's enough ambient light for the focusing to work successfully.

You should also pre-set the white balance to flash, rather than automatic, and set the drive mode to single shot, as you will need to leave a little time between shots for the flash to recharge.

### SETTINGS TO CHANGE ON THE DAY

Once you've set up your lighting, there aren't many settings that you need to alter on the

### TYPICAL SETTINGS FOR STUDIO FLASH

**FILE FORMAT**  
RAW  
**EXPOSURE MODE**  
Manual  
**APERTURE** f/8  
**ISO** 100  
**SHUTTER SPEED**  
1/200 sec  
**FOCUS MODE**  
Manual  
**DRIVE MODE**  
Single  
**WHITE BALANCE**  
Flash

### ADJUSTING EXPOSURE

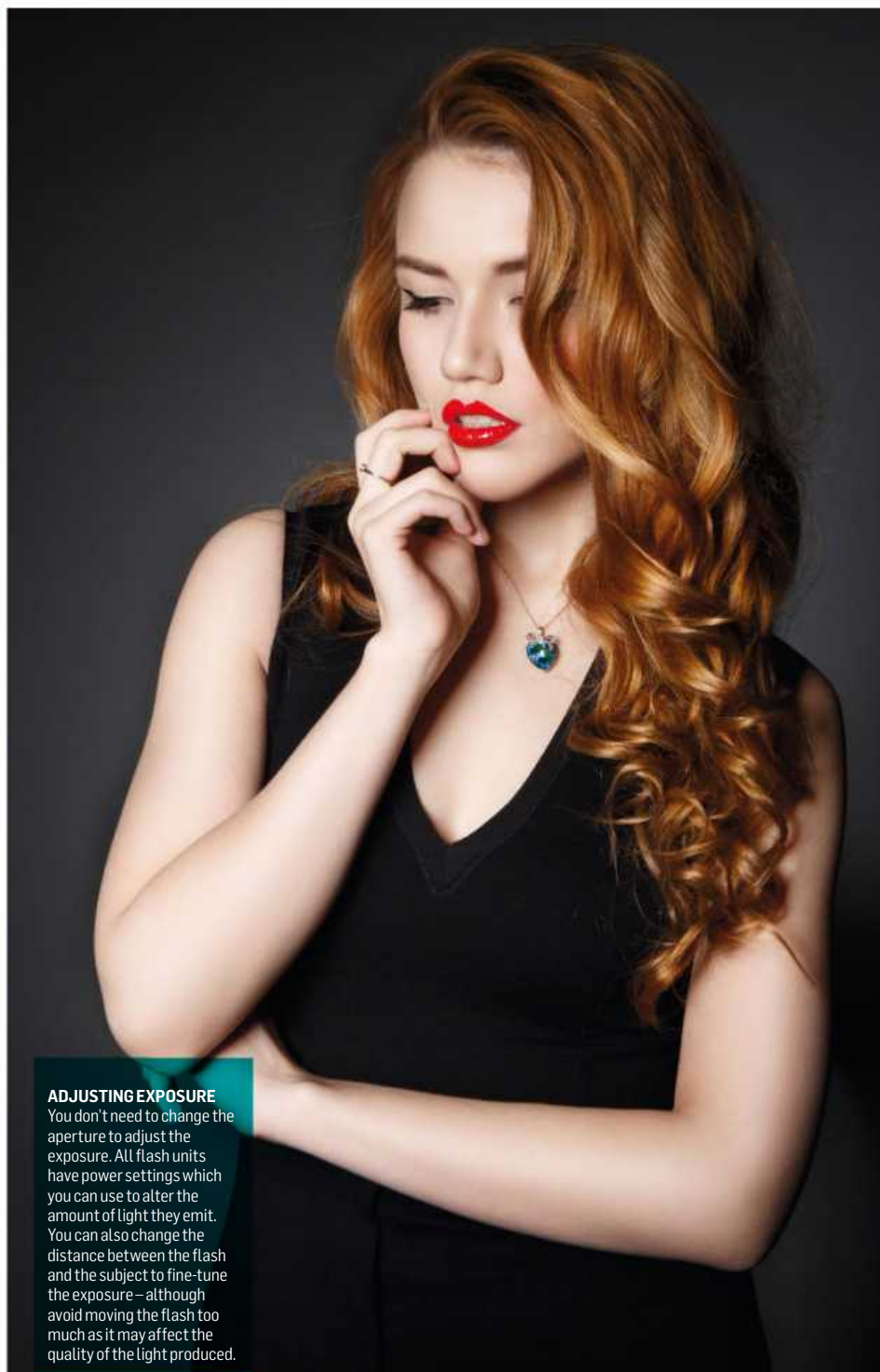
You don't need to change the aperture to adjust the exposure. All flash units have power settings which you can use to alter the amount of light they emit. You can also change the distance between the flash and the subject to fine-tune the exposure – although avoid moving the flash too much as it may affect the quality of the light produced.

camera itself when using studio flash. You might need to fine-tune the exposure by changing the aperture, although you would normally use the power setting on the flash unit for this (see above). When a flash is the only light source, which is usually the case in a studio, you shouldn't change the shutter speed at all, as this won't affect the exposure of your images.

To get the colours absolutely spot-on you can use the custom pre-set white balance option, rather than the flash setting. To use this you need to position a white or grey card in the same position as the subject that you

want to shoot, then take a shot of this card so it fills the frame. Select the Preset manual option in the white balance menu, and then the shot of the card you have just taken as the reference image.

Although this pre-set value will give you a precise white balance for your set-up, the colour temperature of many flashguns will vary slightly when you change the power setting, and it can also be altered by different light modifiers. So, if you change the lighting set-up or the power it's worth doing another shot of the card, and using this to set the white balance.



“WHEN YOU'RE USING STUDIO FLASH AS YOUR ONLY LIGHT SOURCE YOU HAVE TO USE MANUAL MODE, AS NONE OF THE AUTOMATIC EXPOSURE MODES WILL WORK”



**LONG EXPOSURE  
NOISE REDUCTION**

Using long exposures can increase the noise visible in your shots. As such, at night it's best to use your Nikon's long exposure noise reduction system. This does mean that the total exposure time will double for each shot you take, though.

**[ SITUATION SIX ]****NIGHT CITYSCAPES  
AND TRAFFIC TRAILS**

Getting everything ready before you head out will save you trying to change settings in near-darkness

**E**ven though there are sometimes street lights to help you see, it's difficult to change settings on your Nikon when shooting cityscapes at night, so pre-setting as many as possible will make it much easier to get great shots

**THINGS YOU CAN PRE-SET**

Before you set off on a night shoot in the city you can pre-set many of the settings on your Nikon. The combination of dark shadows and bright highlights you'll encounter means that it's best to set your camera to manual exposure mode, as the automatic modes will struggle to get the correct exposure. Once you have selected manual exposure you can set the shutter speed to around 30 secs and the aperture to f/8, and the ISO to 200. You might need to change these once you're on location and can see exactly what light is

available, but they are a good starting point for many night shots.

Because the main light sources at night are street lights, car headlights and other artificial lights, you should set the white balance to the tungsten/incandescent pre-set. You may need to tweak this when you process your images, so it's also best to select RAW file format, as this gives you the option of altering the white balance on your computer later. Finally, you should set focusing mode to manual and drive mode to single shot, and enable long exposure noise reduction in the shooting menu.

**SETTINGS TO CHANGE ON THE DAY**

Although you'll be shooting at night, the lights of most city locations are just bright enough to focus manually successfully. With your camera on a tripod and fixed in position,

you can use the viewfinder or switch to Live View and zoom in on any of the brighter lights to gauge sharpness more accurately. After you have focused manually on the lights in your cityscape you'll need to take a test shot to check the exposure. If you use the histogram display in these situations you will often find that the bulk of the graph is bunched to the left of the image. This is fine, though, as it indicates that there are large areas of the image that are dark, not necessarily that the image is under-exposed. To check the overall exposure you should look at the right of the graph. There should be a 'tail' that indicates the small amount of highlights in the image, and this should just reach the extreme right of the graph. If it doesn't reach the end of the graph, the image is under-exposed, and you need to use a longer shutter speed or increase the ISO. If it goes over the end of the graph there will be some detail lost in the highlights; this is fine for the 'hotspots' of very bright lights, but if the lights are really blown, you should use a faster shutter speed or reduce the ISO.

**TYPICAL  
SETTINGS  
FOR NIGHT  
CITYSCAPES**

**FILE FORMAT**  
RAW  
**EXPOSURE MODE**  
Manual  
**APERTURE** f/8  
**ISO** 200  
**SHUTTER SPEED**  
30 secs  
**FOCUS MODE**  
Manual  
**DRIVE MODE**  
Single shot  
**WHITE BALANCE**  
Tungsten

“BECAUSE THE MAIN LIGHT SOURCES AT NIGHT ARE STREET LIGHTS AND OTHER ARTIFICIAL LIGHTS, YOU SHOULD SET THE WHITE BALANCE TO THE TUNGSTEN/INCANDESCENT PRESET”



## SLR TECHNIQUES

[ SITUATION SEVEN ]

## FREEZING FAST ACTION

You can only pre-set so much for action shots – and don't forget to check everything again on location

**C**apturing the peak of the action when you're shooting fast-moving subjects takes skill, timing and concentration, so you need to be sure that your settings are right before you start.

## THINGS YOU CAN PRE-SET

When you're freezing moving subjects you need to be in control of your Nikon's shutter speed, so start by selecting shutter-priority mode. Then set a fast shutter speed such as 1/1000 sec, although you may need to alter this, depending on the speed of the subject.

To enable you to use a fast shutter speed you'll also need to set a high ISO in all but the brightest of lighting conditions. The precise setting will depend on the amount of light, but try ISO800 as a starting point.

When you can't predict where the subject will be moving accurately you'll need to pre-set continuous focusing (AF-C) mode on your Nikon. In this mode the camera will continue to refocus all the time that you half-press the shutter release, allowing it to track moving subjects. Then you simply press

the shutter fully to take your shot. For most moving subjects you should also set the autofocus area mode to single-point, and select the central point where possible. Although this means that you will have to position the subject in the centre of the frame, this point gives the most reliable and accurate focusing in poor light, giving the camera the best chance of tracking the subject.

With fast-moving subjects you should set the drive mode to continuous, which means that your Nikon will take a series of images when you hold down the shutter release. Some Nikons have two continuous drive modes, low and high speed – you should choose the high option if it's available. It's also best to set the camera to JPEG file format to ensure that you get the maximum frame rate, and to clear the image buffer quickly when shooting.

## SETTINGS TO CHANGE ON THE DAY

No matter how much you prepare, there are always some settings that you'll need to adjust when shooting. First you need to make

## TYPICAL SETTINGS FOR FREEZING FAST ACTION

## FILE FORMAT

JPEG

## EXPOSURE MODE

Shutter-priority

## APERTURE

Set by camera

ISO 800 or higher

## SHUTTER SPEED

1/1000 sec

## FOCUS MODE

Continuous

## DRIVE MODE

Continuous

## WHITE BALANCE

Automatic

sure that your ISO setting is high enough to be able to use a shutter speed fast enough to freeze the action. So, once you are on location, point the camera in the area that you will be shooting and half-press the shutter release to activate the metering. If the aperture display flashes and the metering indicator shows a minus value it means that there isn't enough light to get the correct exposure. Increase the ISO until the aperture stays on constantly, and the exposure display disappears.

You'll also need to check that the 1/1000 sec shutter speed is fast enough to freeze the movement of the subject. The best way is to take a test shot of the subject and see if it's sharp. If it's not, set a faster shutter speed such as 1/2000 sec. But check the exposure at this faster speed, as you might need to increase the ISO to allow you to use it, depending on the lighting conditions.

If there is sufficient light, you can select one of the off-centre focus points, which will enable you to alter the composition of your shots by positioning the subject off-centre. Whichever focus point you select, you will need to keep it positioned over the subject to allow the camera to track its movement.

“ WHEN YOU CAN'T PREDICT WHERE THE SUBJECT WILL BE MOVING ACCURATELY YOU'LL NEED TO PRE-SET CONTINUOUS FOCUSING (AF-C) MODE ON YOUR NIKON ”

## BACK-BUTTON FOCUSING

Many action photographers use a technique called back-button focusing to get consistent results. On high-end Nikons like the D810 and D4, there is a dedicated AF-on button, which can be used to activate the autofocus, but on most models you can use the Controls custom settings menu to change the AE-L/AF-L button to activate the focusing. This enables you to track the focus continuously with your thumb on the 'back button', leaving your forefinger free to fire the shutter release.





**PRE-FOCUSING**

Most sporting events such as motor racing, mountain biking or athletics take place on a track, so you can afford to be. This means you can use a technique known as pre-focusing, where you focus on the point where the subject will be positioned when you want to take your shot. Then you follow the subject in the viewfinder and fire a short burst just as they reach this pre-focused area.

**[SITUATION EIGHT]****PANNING SPORT**

Capture all the high-speed action, whatever the sport or conditions, with the right settings dialled into your Nikon

**A**dding some blur can help to give your action photographs a greater sense of movement, but as with any action photography, pre-setting your camera will make it easier for you to concentrate on capturing the peak of the action once on location.

**THINGS YOU CAN PRE-SET**

Controlling the shutter speed is the key to adding blur to your panning shots, so you should set your Nikon to shutter-priority mode. Because you will need to use a slow shutter speed, you will normally need to use a low ISO, too, so if you're going to be shooting in daylight set the ISO of your Nikon to ISO100 or 200. You can also set your Nikon to manual focus, as it will give more consistent and predictable results than

**TYPICAL SETTINGS FOR PANNING**

**FILE FORMAT**  
JPEG  
**EXPOSURE MODE**  
Shutter-priority  
**APERTURE**  
Set by camera  
**ISO** 200  
**SHUTTER SPEED**  
1/30 sec  
**FOCUS MODE**  
Manual  
**DRIVE MODE**  
Continuous  
**WHITE BALANCE**  
Automatic

using autofocus for most panning shots – but remember that you'll need to set the focus on the area where your subject will be when you want to shoot.

You should also pre-set the drive mode to continuous shooting, or even high-speed continuous, if this is an option on your Nikon. This doesn't mean that you need to take a 'machine-gun' approach to your panning shots, though; it's better to fire in short bursts of three to five shots just as the subject passes through the area that you have already focused on.

Successful panning shots rely on choosing the right shutter speed for the speed and movement of the subject you're shooting. For a fast-moving car or motorbike try 1/125 sec as a starting point, while for slower-moving subjects, such as cycling, start with 1/30 sec – and you can go as slow as 1/8 sec for really slow movement such as walking. Finally, shoot in JPEG, as this will enable you to shoot longer bursts without the risk of your card's buffer maxing out.

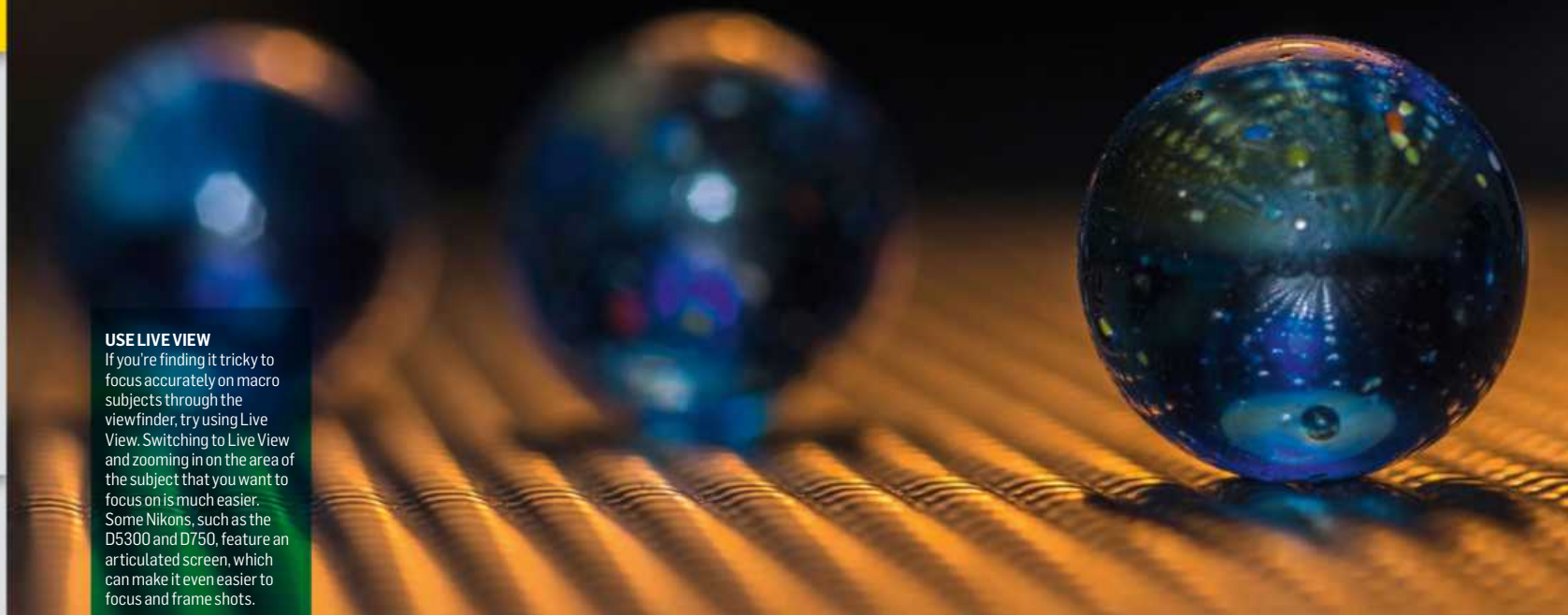
**SETTINGS TO CHANGE ON THE DAY**

As with any action and movement, you'll need to be ready to react to the conditions, lighting and subject that you are shooting on

the day. For a successful panning shot you need to find a viewpoint where you can see the subject for as long as possible. This should include a section before you want to take your shot and after it. Once you've found a suitable viewpoint you'll need to shoot a few test shots to fine-tune your shutter speed choice. If there is too much blur in your images you should try a faster shutter speed, while if the background is too sharp you should try a slower shutter speed to get a little more blur.

While you're shooting these test images you should also just check your exposure, especially if the background is much darker or lighter than the main subject. If the subject is too light you should set the exposure compensation on your Nikon to a negative value, such as -1, while if it's too dark use a positive value, such as +1.

**IF THERE IS TOO MUCH BLUR IN YOUR IMAGES YOU SHOULD TRY A FASTER SHUTTER SPEED, WHILE IF THE BACKGROUND IS TOO SHARP YOU SHOULD TRY A SLOWER SHUTTER SPEED**

**USE LIVE VIEW**

If you're finding it tricky to focus accurately on macro subjects through the viewfinder, try using Live View. Switching to Live View and zooming in on the area of the subject that you want to focus on is much easier. Some Nikons, such as the D5300 and D750, feature an articulated screen, which can make it even easier to focus and frame shots.

**[ SITUATION NINE ]****MACRO PHOTOGRAPHY**

Be prepared to change your settings when you dip into the tiny world of macro

**G**etting great close-ups is all about noticing the details, so the fewer camera settings you need to think about on the day, the more you can concentrate on getting both the subject and the background perfect.

**THINGS YOU CAN PRE-SET**

Just as when you're shooting portraits, depth of field is one of the most important considerations when it comes to macro shots. Because of this, you should set your Nikon to aperture-priority exposure mode to give you control over the aperture setting. An aperture of f/8 is a suitable starting point for macro images, but you may need to alter this to achieve the right amount of depth of field for your shots on the day.

It's best to switch to manual focusing when shooting close-ups, as focusing is often critical for macro subjects, and using manual, rather than automatic, focus will make it easier to get the precise area of the subject you want to be sharp absolutely in

**TYPICAL SETTINGS FOR MACRO**

**FILE FORMAT**  
RAW  
**EXPOSURE MODE**  
Aperture-priority  
**APERTURE** f/8  
**ISO** 200  
**SHUTTER SPEED**  
1/1000 sec  
**FOCUS MODE**  
Manual  
**DRIVE MODE**  
Single shot  
**WHITE BALANCE**  
Daylight

focus (see 'Use Live View', above, for more on how to do this).

As many macro subjects will fill the frame with a single colour, the automatic white balance can produce colour casts on your images. Switching to one of the white balance presets will help you avoid this, but you'll need to set this on the day according to the lighting conditions.

You'll want the best quality possible for most close-ups, but as both camera shake and subject movement can make it impossible to shoot at very slow shutter speeds, setting the ISO to 200 is a good compromise between image quality and allowing the camera to select as fast a shutter speed as possible.

**SETTINGS TO CHANGE ON THE DAY**

Choosing the right aperture – one which will keep as much of the subject as possible in focus but blur the background – is the key to many successful macro images. So even though you can pre-set the aperture to a commonly used setting such as f/8, you'll often need to change this on the fly according to the subject that you are shooting. When you are taking photographs you should also keep an eye on the shutter

speed, as camera shake can be a big problem when you're shooting close-ups.

If the shutter speed is too slow to allow you to shoot hand-held, you can try resting your Nikon on a bean bag or other support, but for a really stable platform you should use a tripod. However, if there's any wind, you can find that subject movement is as much of a problem as camera shake, and if that's the case, the only way to enable a faster shutter speed is to increase the ISO setting on your camera – but beware of noise.

If you are shooting hand-held rather than on a tripod, you can change the drive mode to continuous shooting and then shoot in short bursts, as this will increase your chances that at least one image will be sharp. This is because even very small changes in the distance between the camera and the subject will cause focus errors on many hand-held macro shots; a burst will give you a series of shots at a variety of minutely different distances.

You'll also need to check the white balance on your Nikon to get accurate colours. If, for example, the light is falling on your subject through foliage, it will be greener than normal. This means that the normal pre-set values (or the automatic white balance, though we recommend against that) won't give the correct colours. In these situations it's best to use the custom pre-set white balance by shooting an image of a white or grey card in the same lighting as the subject you want to shoot.

“THE RIGHT APERTURE – ONE WHICH WILL KEEP AS MUCH OF THE SUBJECT AS POSSIBLE IN FOCUS BUT BLUR THE BACKGROUND – IS THE KEY TO SUCCESSFUL MACRO SHOTS”



## [ SITUATION TEN ]

## STARSCAPES

Take a shot in the dark... but make sure you've set up your camera first

**Y**ou'll need to find a really dark location for successful starscapes, which means that you won't want to be changing too many settings in the pitch black, so setting up your Nikon in advance can be a life-saver.

## THINGS YOU CAN PRE-SET

Shooting in almost complete darkness means that you will need to set your Nikon to manual mode. However, unlike with most other night photography techniques, to get successful starscape images you can't use really long exposures as this will cause the motion of the stars to be recorded as star trails in your final image. To avoid this you should set the ISO to a high value such as 3200, the shutter speed to around 5 secs and the aperture to the widest available on your lens. Ideally this should be a very wide aperture such as f/2.8 or f/4.

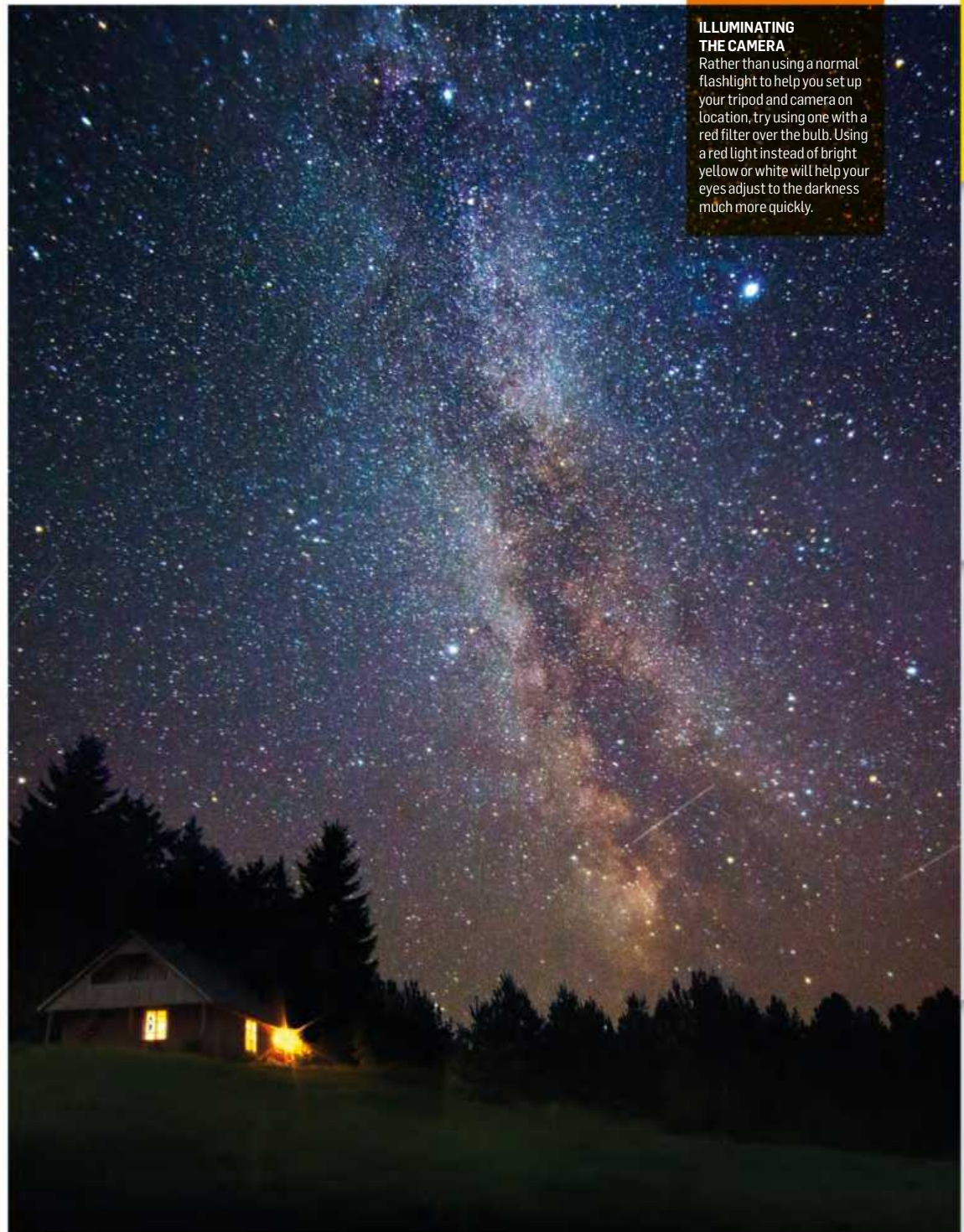
You should also set manual focus mode, as it will be impossible to use autofocus to shoot the stars. Of course, it's so dark when shooting starscapes that even manual focusing can be difficult to use, so the best solution is to pre-set focus to infinity. If you're using a zoom lens, you should also set the zoom to its most suitable setting – usually a wide-angle setting such as 18mm. Then point your camera at a distant subject and carefully focus. To prevent this moving you can use a small piece of tape to keep the focus set at this position.

To minimise the noise in your images you should select the RAW file format, and also turn on the long exposure noise reduction mode in the camera settings menu.

## SETTINGS TO CHANGE ON THE DAY

There are many challenges when shooting starscapes, but focusing in the complete darkness is one of the most tricky. Having pre-set the focusing, you shouldn't need to change it, but if you have to alter the zoom

“ TO GET SUCCESSFUL STARSCAPE IMAGES YOU CAN'T USE REALLY LONG EXPOSURES, AS THIS WILL CAUSE THE MOTION OF THE STARS TO BE RECORDED AS STAR TRAILS IN YOUR FINAL IMAGE ”



## ILLUMINATING THE CAMERA

Rather than using a normal flashlight to help you set up your tripod and camera on location, try using one with a red filter over the bulb. Using a red light instead of bright yellow or white will help your eyes adjust to the darkness much more quickly.

## TYPICAL SETTINGS FOR STARSCAPES

**FILE FORMAT** RAW  
**EXPOSURE MODE** Manual  
**APERTURE** f/2.8  
**ISO** 3200  
**SHUTTER SPEED** 5 secs  
**FOCUS MODE** Manual  
**DRIVE MODE** Single shot  
**WHITE BALANCE** Tungsten

setting, or the focus setting has been changed, then you'll need to focus your lens on the far distance. Try turning on Live View, and find the brightest object in the sky that you can see. You can then zoom in on the Live View image using the magnify button on the back of the camera (not the zoom on the lens), and adjust the focus manually.

Even when using this method it can take time and patience to focus accurately, though, and you'll find the whole process rather easier if you give your eyes plenty of time to become accustomed to the darkness. To do this you'll need at least

10 to 20 minutes on location without looking at any bright lights, using a flashlight or even activating the rear screen on your SLR.

Once you've focused, you will need to take a test shot using the settings that you have pre-set, and then check the exposure. The results should appear quite dark, with little detail in the foreground, but make sure that the stars are clearly visible. If your test shot is too bright you can use a shorter shutter speed, such as 2 secs. If it's too dark you'll need to adjust the ISO to a higher value rather than using a longer shutter speed, to avoid recording the movement of the stars. ■

# THE 10 THINGS YOU NEED TO MASTER ON YOUR NIKON

Confused by the options on your camera? Nikon expert Chris Rutter explains which features you really need to get to grips with, and which you can manage without...

**T**he vast array of buttons, menus and other features available on even the most affordable Nikon D-SLR can sometimes seem pretty daunting, especially if you're just starting out. Understanding which features are worth exploring, and which are best left alone, is fundamental to getting

the most from your camera. So, we've come up with the 10 most important things that you need to get to grips with to use your Nikon to the full.

We've broken these down into five sections, where you'll find out how to use the different focusing, exposure and other modes to help you really take control of your camera. There are

also suggestions for other features to try once you've mastered the essentials, to enable you to take your photography to the next level. And we've even included features that are best left alone, at least until you've got the hang of the fundamentals. These advanced features do have their uses when you're shooting in very tricky or

specialised circumstances, but they aren't necessary for the vast majority of subjects and situations.

So, whether you've just started using your Nikon, or are already an experienced user, you'll find plenty of handy information about the different features and modes available on your camera. Read on to learn more...

## FOCUSING



1 FOCUS LOCK



2 FOCUS TRACKING

## EXPOSURE



3 EXPOSURE COMPENSATION



4 HISTOGRAM DISPLAY

## SPEED



5 BURST MODE



6 VIBRATION REDUCTION

## SHOOTING MODES



7 SHUTTER-PRIORITY



8 APERTURE-PRIORITY

## LIGHTING ESSENTIALS



9 ISO



10 WHITE BALANCE







# FOCUSING

## 1\_FOCUS LOCK

*Even the most sophisticated autofocus systems need you to take control in order to focus on off-centre subjects*

### WHAT IS IT IN A NUTSHELL?

Positioning your subject off-centre is one of the best ways to improve the composition of your shots, but you need to make sure that your Nikon focuses on this area rather than what's in the middle of the frame, otherwise you could end up with your subject out of focus and your background pin-sharp (a problem common to compact camera users). With static subjects, the easiest way to do this is to use a technique known as focus lock.

### WHY IS IT SO IMPORTANT?

Focus lock is the perfect technique to use when you want to vary the

composition by positioning the subject in different areas of the frame. Once you have locked the focus, you can position the subject anywhere in the frame, and as long as you remain the same distance away, it will be sharp.

This is useful on cameras which have a limited number of AF points, as they only allow you to focus on a limited number of areas within your scene. Using focus lock, you can place the subject in areas of the frame where there aren't any suitable AF points.

### HOW DO YOU USE IT?

To use focus lock, you need to set your camera to single shot autofocus mode

(AF-S). Then, frame the scene so your subject is in the centre and half-press the shutter release until the camera focuses. You can then recompose your image so that the subject is anywhere in the frame, but you must keep your finger half-pressed on the shutter release, and make sure that you don't change the distance between you and the subject. Then, once you're happy with the composition, you can press the shutter fully to take your shot.

### WHAT YOU CAN IGNORE

#### Auto AF point selection

Like many automatic functions, the automatic AF point selection can work perfectly well, but it doesn't always pick the AF point that corresponds with the thing that you want to focus on. You'll get more reliable and consistent results by choosing the AF point manually (see Taking it further), or simply leaving it set to the central AF point and using the focus lock technique described above.

## TAKING IT FURTHER

### MANUAL AF POINT SELECTION

While focus lock is a simple and effective method of focusing on off-centre subjects, it's not always convenient. If your subject is going to be in the same off-centre position for a series of images, you should manually select an AF point that corresponds to that position within the frame. This is also the best option if your subject is likely to move closer or further away from your camera in the time it takes you to focus and recompose.

## Real-world example

■ For this candid portrait I set a wide aperture of f/2.8 to blur the background, but I had to focus accurately on my subject's face. As he was quite animated, constantly chatting, moving and even occasionally singing, I couldn't really use focus lock. Instead, I selected the AF point over his eye and was then able to concentrate on my subject, safe in the knowledge that if he moved slightly closer or further away, I could quickly refocus without having to reframe.



## SLR TECHNIQUES

You need to keep the focus point positioned over a moving subject to ensure accurate focus tracking



## 2\_FOCUS TRACKING

*When you're shooting moving subjects you need to choose the right focus mode to keep them sharp. Here's how...*

So-called focus lock enables you to focus on a subject that's off-centre and then recompose

### WHAT IS IT IN A NUTSHELL?

There are three main autofocus modes on Nikon D-SLRs: single, continuous and automatic. If you want to track a moving subject you need to select the continuous autofocus mode (AF-C). In this mode the camera will continuously adjust the focus whenever the shutter release is half-pressed, enabling it to track subjects that are moving towards or away from your camera.

### WHY IS IT SO IMPORTANT?

Shooting moving subjects is a challenge for any focusing system, so you need to choose the right mode in order to give yourself the best chance of keeping your subject sharp. Even though the automatic AF mode will switch between single and continuous AF when it detects a moving subject, it's still better to switch the camera to AF-C mode so that it will continuously track moving subjects.

In continuous mode the camera automatically switches to predictive focusing; this analyses the movement of the subject and tries to predict where it will be at the exact moment when you fire the shutter. It's not completely foolproof, particularly when the subject is moving erratically,

but it still gives you the highest hit rate of any AF mode for moving subjects.

### HOW DO YOU USE IT?

Once you have chosen AF-C mode, the camera will automatically adjust the focus for as long as you keep the shutter release half-pressed. To use this mode successfully, it's important to keep the focus point positioned over the subject for as long as possible, otherwise the camera will focus on another part of the scene, and you'll then need to reframe and refocus, which can mean that you miss the perfect moment.

### WHAT YOU CAN IGNORE

#### 3D AF tracking

This focusing mode relies on the focus locking on to the subject, and it will then move the focus point automatically if the subject moves in the frame. This can work well in some situations, but the camera will always struggle to identify the main subject if it's close to the background or contains similar tones and colours to the surroundings. Therefore, in most situations it's often better to use a single AF point, and keep this positioned over the subject for as long as you possibly can.

## TAKING IT FURTHER

### BACK-BUTTON FOCUSING

If you're shooting fast-moving subjects, it can be difficult to keep the autofocus activated and take pictures at the same time. The solution is to set up your Nikon so that focusing is activated by a button on the rear and not the shutter release; this is known as back-button focusing. Pro models have a dedicated button for this, but on most other models you can assign the AE-L/AF-L button to it.



## Real-world example

■ A bird in flight is one of the most challenging subjects for your focusing skills. To capture these red kites, I needed to ensure that the focus point was positioned over a bird for as long as possible, so I used back-button focusing. This meant that I could follow individual birds while holding down the AF-on button to track them, and I could then fire the shutter independently of the focusing.



## EXPOSURE

## 3\_EXPOSURE COMPENSATION

*Want to take more control of exposure, but don't know where to start with manual mode? Exposure compensation is much easier to use, and much more intuitive as well...*

## WHAT IS IT IN A NUTSHELL?

Exposure compensation is essentially a way of brightening or darkening shots in aperture-priority, shutter-priority, or even program mode without having to resort to manual exposure. This is ideal for those situations where the camera's automatic metering produces under- or over-exposed results, such as when shooting very light or very dark subjects.

## WHY IS IT SO IMPORTANT?

Even a metering system as sophisticated as Nikon's 3D Matrix metering system can be fooled into under- or over-exposing when the subject contains a large amount of dark or light tones. Learning how and when to use exposure compensation is a vital tool in your armoury for getting spot-on exposures.

There are many situations where this can be useful, but the classic is

when the background is much darker or lighter than the subject you're shooting, such as a person standing against a window. In these cases, exposure compensation is perfect for ensuring that your subject is correctly exposed, rather than the background.

## HOW DO YOU USE IT?

You apply exposure compensation by holding down the +/- button on the camera body, and then using the rear input dial to set the amount of compensation required. The settings that this affects will vary depending on which exposure mode you are using. If you're using aperture-priority mode, for example, the aperture value will stay the same, but the shutter speed will change to let in more or less light. The opposite is true when you're shooting in shutter-priority mode; in this case, the shutter speed will remain unchanged but the aperture

will vary, again to let in more or less light. All you need to remember is that positive exposure compensation brightens images, while negative exposure compensation darkens them.

Exactly how much exposure compensation you need to dial in will vary depending on how much of the scene is light or dark, but a good starting point is to set + or - 1, and then take a test shot.

## WHAT YOU CAN IGNORE

## Auto exposure lock

Exposure lock (AE-L) is another way to control the exposure in all auto exposure modes, but in order to use it you have to point the camera at a subject that contains mostly mid-tones, lock the exposure using the AE-L button, and then recompose your image. This isn't convenient in most situations, so it's usually better to use exposure compensation.

## TAKING IT FURTHER

## EXPOSURE BRACKETING

Judging exactly how much exposure compensation to use can be tricky. One option is to set up your Nikon to capture a series of images, each using different amounts of compensation. You need to select the number of shots (three is usually enough) and the amount of exposure compensation (start with +/- 1). Then press the shutter release three times, and your camera will take a series of shots at -1, 0 and +1.



## Real-world example

■ The large areas of snow in this landscape meant that the camera would have under-exposed the scene if I'd left it to its own devices. I set exposure compensation to +1, which kept the snow on the far slopes white (the snow in the foreground was speckled with volcanic dust). Using +1 exposure compensation also meant that there was more detail in the dark rocks than there would have been.



## 4\_HISTOGRAM DISPLAY

*Judging the exposure from the image alone is difficult, so your Nikon has a display mode to help you get it right*

## WHAT IS IT IN A NUTSHELL?

The histogram is a graph that shows you the distribution of tones within an image. The shape of this graph will vary from shot to shot, but it's the distribution of the graph, and its position along the bottom axis, that are the key elements when it comes to gauging the exposure of your shots.

## WHY IS IT SO IMPORTANT?

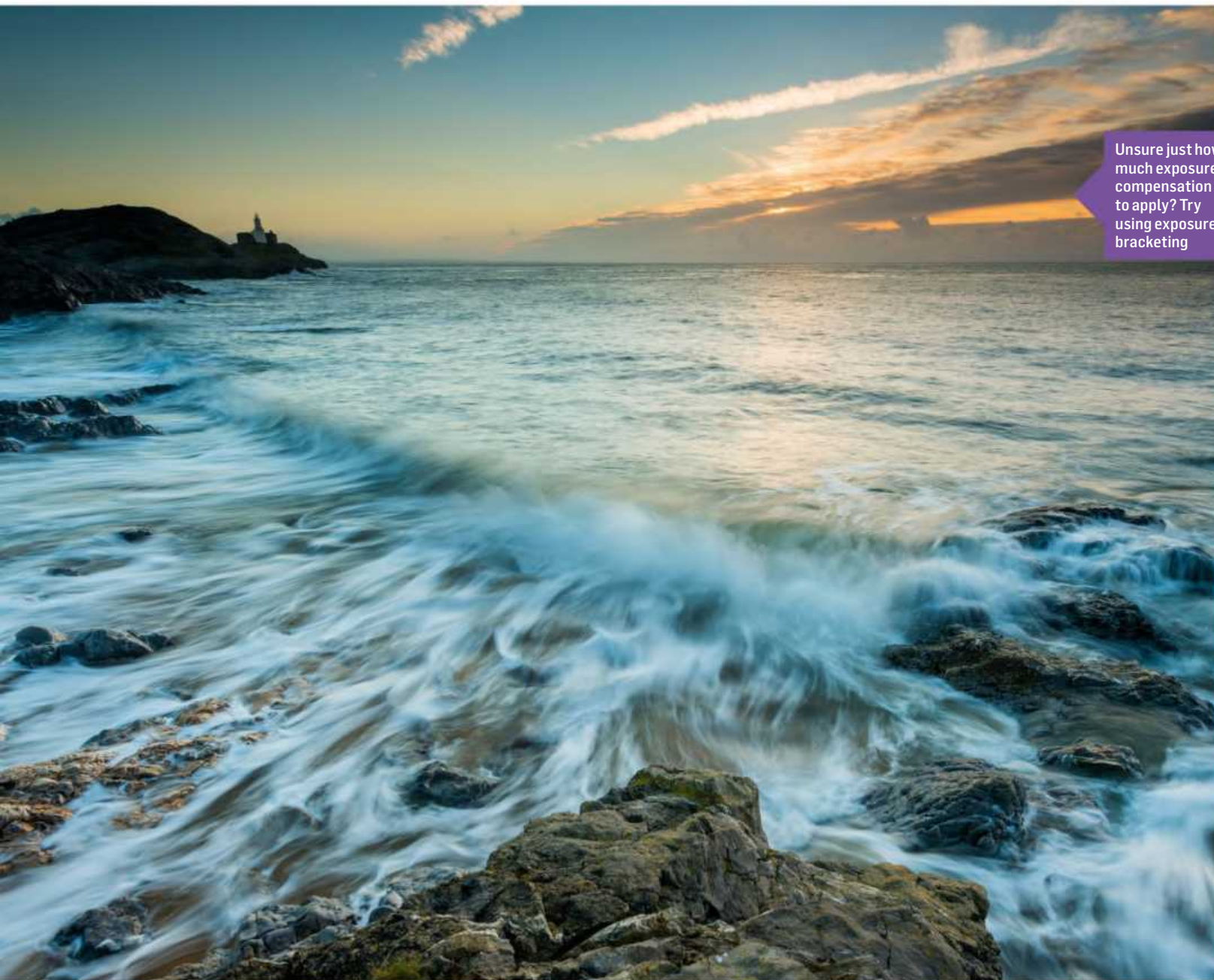
Understanding the histogram will enable you to fine-tune your exposure to make sure that you capture the maximum amount of detail in the tones of your images. The horizontal axis shows you the brightness of the tones in the image, from the darkest black on the extreme left to the brightest



Your histogram will help you check whether any parts of your photograph are under- or over-exposed



Unsure just how much exposure compensation to apply? Try using exposure bracketing



white on the right. The areas in between these two extremes are the tones that will be correctly displayed in your image. If the graph goes over the right-hand edge, there will be areas where the highlights will have no detail, while if it goes over the left-hand end, it will be the shadows that have no detail.

### HOW DO YOU USE IT?

To display the histogram when you review images on your Nikon, press the Play button and then toggle the top or bottom of the rear control pad to scroll through the different display modes, until the histogram is displayed alongside the image.

If the graph is bunched to the left, with a gap to the right, then the image is under-exposed (unless the subject is very dark), so you should increase the exposure on the next shot; if it's bunched to the right, with a gap to the left, it's over-exposed, so you need to reduce the exposure.

If you're shooting a very high-contrast subject you may end up with a histogram that overlaps both ends of the graph. In these situations you can't keep detail in both the highlights and the shadows in a single shot, so you'll have to decide which is more important in your image. It's usually best to set the exposure so that the highlights reach the right-hand end of the graph, and then 'let the shadows fall where they may'.

### WHAT YOU CAN IGNORE

#### RGB histograms

Along with the normal histogram display, there's the option to display separate histograms for the red, green and blue (RGB) colour channels. This gives you even more information about the individual colours, but in most situations this isn't necessary for getting a correct exposure, and having to check three graphs, rather than just one, can make it more difficult to spot under- or over-exposure.

## TAKING IT FURTHER

### HIGHLIGHT WARNING

Along with the histogram, there's another display mode available on your Nikon that can help you retain detail in your shots. The Highlights (or Clipping) warning display alerts you when the very brightest areas of the scene are over-exposed. These areas will flash black and white, indicating that you need to reduce the exposure if you want to keep detail in these highlights.



## Real-world example

■ With sunlight filtering through the trees creating dappled lighting, the exposure for this shot was always going to be a compromise. I switched on the histogram display and took a test shot; the automatic exposure proved to be too light. Turning on the highlight warning confirmed that the lighter areas of the tiger's fur were a touch over-exposed, so I set exposure compensation to -2/3 to get the shot.





Burst mode boosts your chances of getting sharp shots when shooting fast-moving subjects



## 5\_BURST MODE

*You can choose whether your Nikon takes a single shot or a burst of images when you press the shutter release. Here's when and why to use the different drive modes*

### WHAT IS IT IN A NUTSHELL?

Most Nikons have two main drive modes, single and continuous. In single shot drive mode, your camera will take one shot when you fully press the shutter release, but won't take another until you lift your finger off the release and press it again. This is perfect if you only want to take one shot at a time,

but for moving subjects it's often better to switch to continuous shooting mode, as this enables you to fire off a burst of images when you hold down the shutter release.

### WHY IS IT SO IMPORTANT?

Capturing the decisive moment when shooting action or movement is partly

about timing, but you can increase your chances of getting that special shot by selecting continuous mode and taking a sequence of images one after the other.

You can use continuous mode when shooting static subjects, but it's best to stick to single shot drive mode; in continuous mode it's very easy to leave your finger on the shutter and fire off a burst of identical images unnecessarily, using up both time and space on your memory card.

### HOW DO YOU USE IT?

Once you've set continuous drive mode it's not just a case of keeping your finger on the shutter release and hoping you'll get the shot. The best way to use this mode is to shoot in

short bursts, normally of around three to five images, at the height of the action. This will help prevent you simply taking loads of unnecessary images, and also keep the camera's image buffer as clear as possible, so it's always ready to capture a shot.

### WHAT YOU CAN IGNORE

#### Custom frame rates

Many Nikon SLRs allow you to set custom frame rates, but this isn't necessary for most situations. They might help you to keep shooting for longer without filling the image buffer, but you will normally want the fastest frame rate possible to ensure that you can capture the height of the action. In general, it's far better to shoot in short bursts than to lower the frame rate.

## TAKING IT FURTHER

### CONTINUOUS MODE FOR MACRO

Burst shooting is a great way of ensuring you get pin-sharp shots when focusing is critical, such as with macros, particularly when shooting handheld. By shooting in a short burst just as the subject comes into focus in the viewfinder, or on the LCD in Live View mode, you can increase your chances of getting one sharp shot. This technique is invaluable if the subject is moving.



## Real-world example

■ For this shot I positioned myself just after a jump on the bike track, and set the AF mode to continuous (see page 23), and the drive mode to continuous. I then tracked each bike as it flew in front of me, and just as it was opposite me I fired a burst of three or four shots. This meant that I almost always got one or two usable shots of each bike.





VR allows you to shoot handheld and use slower shutter speeds than would usually be possible



## TAKING IT FURTHER

### MIRROR LOCK-UP

Even when your camera is on a tripod and you're using a remote release, the movement of the mirror when you fire the shutter can create enough vibration to blur the image. Many Nikons have a mirror lock-up feature to prevent this. To use this, select mirror lock-up mode, press the shutter release to lock the mirror out of the way, and then press the shutter release to take your shot.



### Real-world example

■ For a static shot like this I'd normally use a tripod, but in this case I wasn't planning on shooting a static shot, so I hadn't brought one with me (there's a lesson in there somewhere!). I checked the exposure and decided that I could just about get away with shooting the car hand-held. With the VR system helping out, I managed to get several sharp shots at 1/15 sec and 1/20 sec using a 24mm lens on my D7000.



## 6\_VIBRATION REDUCTION

*Getting sharp results isn't just about focusing – you also need to avoid camera shake, as that may blur your shots*

### WHAT IS IT IN A NUTSHELL?

Blurred images due to camera shake are caused by your camera moving during the exposure. This is most common when you're holding your camera to shoot, and using a shutter speed that's too slow to 'freeze' any camera movement. The longer the focal length of the lens, the more any movement is magnified, so the faster the shutter speed you need to freeze the movement of the camera.

Many Nikon lenses have a feature called Vibration Reduction (VR) that will reduce the effects of camera shake by moving the elements within the lens itself to compensate for any movement of the camera.

### WHY IS IT SO IMPORTANT?

Vibration Reduction essentially enables you to use shutter speeds much slower than would normally be possible and still get sharp results, so it's ideal in low light, for example.

There is a limit to how much vibration reduction systems can do, though, so if you're planning to use very long shutter speeds, or very long lenses, then it's still worth using a tripod (or monopod) to maximise your chances of getting sharp results.

### HOW DO YOU USE IT?

The VR system is activated by a switch on the lens. Once it's switched on the system uses 'floating' elements within

the lens to compensate for any camera movement.

The shutter speed needed for avoiding camera shake without VR will vary according to the focal length of the lens you're using. With an FX (Nikon full-frame SLR) camera the rule of thumb is that you need a shutter speed of 1/focal length to prevent camera shake; so for a 200mm lens you should use 1/200 sec or faster. But with a Nikon DX model it's best to use an even faster shutter speed, as the effective focal length will be 1.5 times longer (in other words, 300mm effective focal length rather than a 200mm).

Once you've activated the VR system you can use slower shutter

speeds, but there's still going to be a limit to how slow you can go. VR systems will usually allow you to shoot around three stops slower than normal, so if you would normally need to shoot at 1/250 sec to get sharp results, then you should be able to shoot at 1/30 sec with VR.

### WHAT YOU CAN IGNORE

#### VR when using a tripod

Vibration reduction becomes completely redundant once you've fixed your camera to a tripod. Even though the systems in many modern lenses are designed to switch off automatically when they don't sense any movement, it's still worth turning them off when you are using a tripod. This will prevent the VR from activating if there's a small movement, such as when you adjust the settings or reframe your shot, which can potentially cause your shot to be blurred, as the VR will move the elements inside the lens.

## SHOOTING MODES

Shutter-priority mode enables you to take control of shutter speed to get more creative with motion blur



## 7 SHUTTER-PRIORITY

*Taking control of the shutter speed gives you the ability to freeze or blur motion*

## WHAT IS IT IN A NUTSHELL?

Choosing whether to capture moving subjects as sharply as possible, or with some blur, is a critical. For maximum sharpness you'll need a fast shutter speed, usually 1/500 sec or less. At these speeds there needs to be plenty of light, or you have to increase the ISO (see page 30).

## WHY IS IT SO IMPORTANT?

It's usually important that the main subject is sharp, but using fast shutter speeds to freeze movement can also create images that reveal details that are invisible to the naked eye.

That said, the down side to freezing movement is that the subject can

appear static, so you need to use this technique with care. For the best results there needs to be some aspect of the subject that implies movement, so look for moments when your subject leaves the ground, kicks up dust or spray, or is in a position that would be impossible if it were standing still.

## HOW DO YOU USE IT?

Shutter-priority exposure mode is perfect for giving you control over the shutter speed in most situations. In this mode you can select the shutter speed via the input dial, but this doesn't mean that the camera can always choose an aperture that will give you the correct exposure.

When using fast shutter speeds to freeze movement, you need to watch the aperture displayed in the viewfinder, and if it starts to flash (and the exposure scale displays a negative value), it means that there isn't enough light for a correct exposure, even at the widest aperture available on your lens. In this case you will need to set a higher ISO – do it in stages until the display stops flashing.

## WHAT YOU CAN IGNORE

## Extremely fast shutter speeds

Nikon SLRs offer maximum shutter speeds of 1/4000 sec or even 1/8000 sec, but these speeds are rarely useful in real-world situations. Most moving subjects can be frozen by speeds of 1/2000 sec or slower, and you'll need extremely bright conditions, a wide aperture and a high ISO setting to use shutter speeds faster than this. It's much better to use high-speed flash to freeze subjects like water splashes or other extremely fast-moving objects.

## TAKING IT FURTHER

## SLOW SHUTTER-SPEED EFFECTS

You don't always have to freeze movement; using a slow shutter speed to add some blur can add a sense of movement and action to a photograph. There are many ways that you can do this, such as panning with a moving subject to blur out the background (right), or keeping the camera completely static and blurring any elements of the scene that are moving during the exposure. Which technique you use really depends on the effect you're trying to create.

## Real-world example

■ When choosing whether to freeze or blur movement, the main factor to consider is whether the subject will appear static and lacking in drama if there isn't any blur. For this shot I knew that there'd be plenty of mud and dirt being thrown into the air as the bikes roared over this hill, so I decided to freeze the action by using a shutter speed of 1/1000 sec. Of the many shots I got, this one showed the bike at its best, with its rider surrounded by dirt.



## SLR TECHNIQUES

You can use aperture-priority mode to blur out the background and isolate your detailed subject



## 8 \_APERTURE PRIORITY

*Deciding how much of the scene is in focus can make or break the impact of your shots, so here's how to control it*

### WHAT IS IT IN A NUTSHELL?

The amount of a scene that's sharp in front of and behind the focus point is known as depth of field. Depth of field is affected by three factors: the aperture, the focal length of the lens, and the distance between your camera and the subject. Once you have decided on a composition, the focal length and the distance will remain almost constant, so the main variable that you can control to alter the depth of field in your shot is the aperture.

### WHY IS IT SO IMPORTANT?

Along with choosing the shutter speed, controlling the depth of field is one of the most important creative decisions you have to make when you're taking a photograph. Keeping the whole scene sharp is typically used in landscape and architectural photography as it's important that the viewer can see everything clearly, but many other subjects, such as portraits or flowers, will often benefit from using shallow depth of field to help isolate the subject from the background.

When you're using shallow depth of field it's important to remember that you don't always need to use the widest possible aperture, particularly if you're using a lens such as a 50mm f/1.8. You can run the risk of the depth of field being so shallow that too little of the subject is sharp to result in a

pleasing image. It's always worth checking that you haven't gone too far.

### HOW DO YOU USE IT?

The best way to take control of the depth of field is to set your camera to aperture-priority mode. You can then use the input dial to select the aperture you want, and the camera will automatically select the shutter speed for you.

You need to use large apertures, such as f/4 or f/2.8, to get images with very little in focus in front of and behind the focus point, and small apertures, such as f/11 or f/16, when you want to keep as much of the scene in focus as possible.

### WHAT YOU CAN IGNORE

#### Very small apertures

While using a lens's smallest aperture (usually something like f/22 or f/29) will result in images with the maximum depth of field, it's not always a good idea to use very small apertures if you're aiming to get the sharpest possible results. This is because the image can be affected by an optical effect called diffraction, which actually reduces the sharpness. Unless you really need such a small aperture to keep absolutely everything in focus, you should use a slightly larger aperture, such as f/16 or f/13, to ensure the sharpest results.

## TAKING IT FURTHER

### FINDING THE 'SWEET SPOT'

Lenses don't produce the same sharpness at every available aperture. At wide apertures you'll find that the centre of the image is sharp, but the edges are soft, while at small apertures the whole image lacks sharpness. If you are after the best quality, it's worth setting up your camera on a tripod to shoot a flat subject (ideally a test chart). Then shoot it at different aperture values, and check the sharpness at 100% on your display, to find the best aperture to use. This known as the 'sweet spot' of the lens.



## Real-world example

■ I will often use a telephoto lens for shooting close-ups. This lets me shoot from a greater distance, which compresses the perspective to make the background appear closer to the subject. It means that controlling the depth of field is really important: for this shot, taken with a 200mm lens, I tried apertures from f/2.8 to f/8, but f/4 was best. It blurred the background, but kept most of the flowers sharp.



## SLR TECHNIQUES

## LIGHTING ESSENTIALS

## 9\_ISO

*The quality of images taken at high ISOs on current cameras means you can now shoot even when the light levels are low...*

## WHAT IS IT IN A NUTSHELL?

ISO is simply a measure of how sensitive your camera's sensor is to light – at high ISO settings, such as 800 or 1600, the sensor needs less light to provide a correct exposure. If you don't increase the ISO in low light, a shutter speed fast enough to shoot handheld might not let in enough light for a correct exposure – increasing the ISO makes the sensor more sensitive, so the limited amount of light provided by the fast shutter speed (in other words, a short exposure) should be enough for a correct exposure.

## WHY IS IT SO IMPORTANT?

Using high ISO settings used to mean loads of noise, and hence low-quality images, but modern Nikon D-SLRs are capable of producing excellent-quality images at much higher ISOs than their predecessors. This means that you can shoot in lower light while still using a

faster shutter speed – perfect for avoiding both camera shake and blur due to subject movement. However, despite these advances, there is still some drop-off in quality as you increase the ISO, so you should try to keep the ISO at the lowest setting that will still allow you to get the shot.

## HOW DO YOU USE IT?

When you're shooting in low light but want to use a fast shutter speed, set your SLR to shutter-priority mode to allow you to choose the shutter speed you need to freeze any movement. Now point your camera towards your subject and check whether the aperture display is constantly lit or flashing. If it's constantly lit there's enough light to start shooting, but if it's flashing then you need to increase the ISO until it's constant. Flashing indicates that the camera cannot achieve a correct exposure for the

## TAKING IT FURTHER

## AUTO ISO

Along with setting specific ISO values, Nikon SLRs have an automatic ISO option. This is ideal if you want to make sure that the shutter speed doesn't drop too low in constantly changing lighting conditions, leading to blur from camera shake or subject movement. In this situation you can set the ISO to auto, and in the set-up menu you can choose the highest ISO setting that you're comfortable with.



lighting conditions, but remember that if the light changes or the subject moves into a darker location, you'll need to watch out for the flashing aperture display again, and change the ISO to compensate.

## WHAT YOU CAN IGNORE

## Expanded ISO settings

Most Nikon SLRs offer a range of ISO settings above the 'native' highest

## Real-world example

■ I'd normally use a low ISO when shooting portraits, but the lighting in this glass-blowing workshop was very dark, and the position of the work bench meant that the subject was facing away from what little light there was. After a quick check of my exposure I set the ISO to 1600 and the aperture to f/3.5 to get a shutter speed of 1/60 sec, which was fast enough to keep the subject sharp as he worked.



values. These are known as 'expanded ISO settings'. These are best avoided in all but the most extreme shooting conditions, as along with increased noise, which shows up in the form of speckles on your photographs, using these settings can also lead to a greater risk of blown highlights and blocked-out shadows, as they often have a lower dynamic range than the normal ISO settings.

White balance is essentially a way of ensuring that whites actually look white in your images



## 10\_WHITE BALANCE

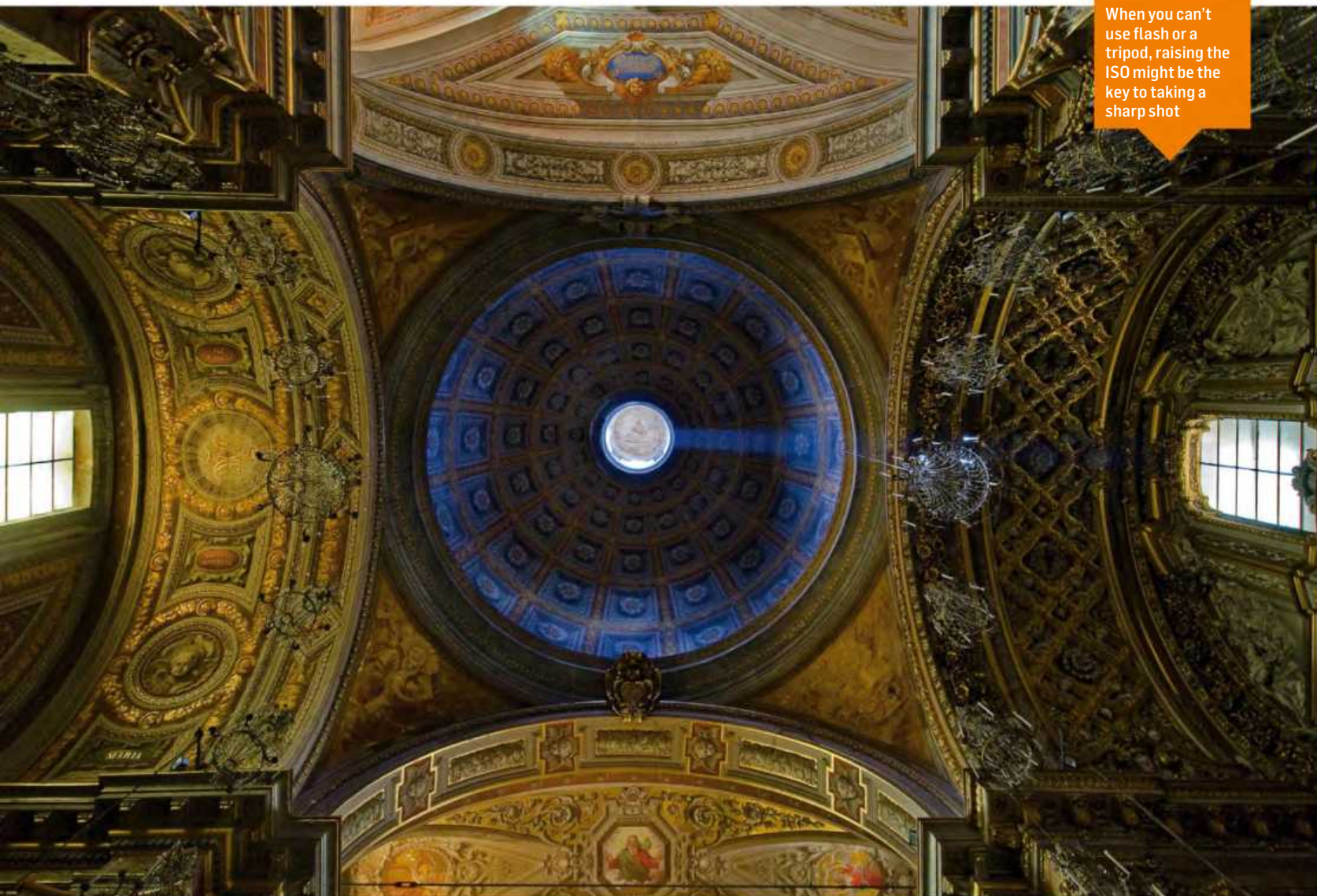
*Here's how to ensure accurately reproduced colours on your Nikon*

## WHAT IS IT IN A NUTSHELL?

The colour of the light from different light sources varies from the cool, blue tones of shade under a blue sky to the warm, orange colour of a sunrise or sunset. The white balance setting on your Nikon allows you to compensate for the different colours of various light sources to make sure that the colours of your shots are accurate (in other words, so that whites actually look white, and don't appear slightly blue or yellow).



When you can't use flash or a tripod, raising the ISO might be the key to taking a sharp shot



### WHY IS IT SO IMPORTANT?

Even though you can change the white balance when you process your images (as long as you shoot in RAW) it's still important to choose the right white balance when you take your shots. At the very least it means you won't have to waste time changing it when you process your images. In addition, using the wrong white balance can also affect how colours are recorded. For example, if you're shooting a sunset and use a warm white balance setting, such as Shade, it will boost the amount of orange and red in the shot. This will shift the histogram to the right slightly, giving the impression that the photograph is over-exposed, whereas with a cooler white balance setting these tones would move a little to the left, so the image would actually be correctly exposed.

### HOW DO YOU USE IT?

The auto white balance setting on your Nikon can cope with a wide range of

lighting conditions, but for more consistent results you can use one of the presets. These presets cover most lighting that you will encounter, including fluorescent and tungsten lighting, but there are some common light sources that don't have their own setting. The most common is sunlight at sunrise or sunset – in these cases it's best to start by setting the white balance to daylight, and taking a test shot to check that the colour reproduction looks accurate.

### WHAT YOU CAN IGNORE

#### Manual colour temperature

In the white balance menu you can set the colour temperature, rather than using one of the presets. This can give an accurate white balance setting, but to set the colour temperature manually with any precision you'll need to use a colour temperature meter, which are expensive, and unnecessary for all but the most specialised uses. ■

## TAKING IT FURTHER

### CUSTOM WHITE BALANCE

To create a custom white balance you need to place a sheet of white or grey card where the subject that you want to shoot is, in the lighting that you want to use. Fill the frame with this card and take a shot, ensuring that it isn't over-exposed. You can then select the preset manual option from the white balance menu, pick the shot, and the camera will set the white balance to suit the lighting.



### Real-world example

■ Capturing the drama in this landscape was challenging, as the light was constantly changing. When setting the white balance I chose the daylight preset. Using automatic would have corrected the orange in the sky, while a warmer setting would have increased the colour saturation in the sky, but this would have meant that the colours would have made the sky over-exposed.





# MASTER MAGNIFICENT MONOCHROME

Get your best black-and-white shots ever with our guide to shooting, converting and adjusting your images

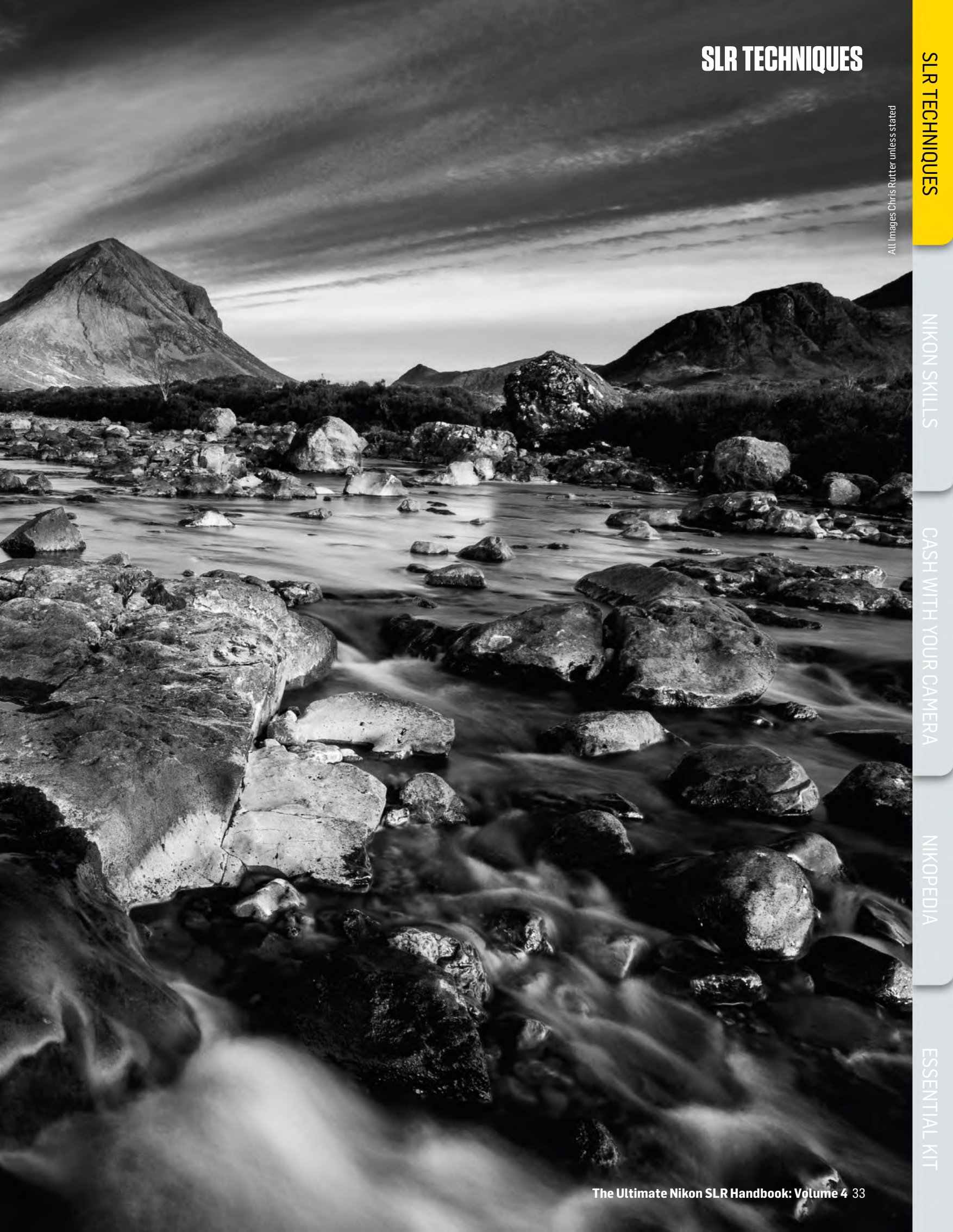
**E**ven though we see, and can capture, the world around us in all its colour, the simplicity of black and white has always made it a popular medium for photography. But there's more to capturing effective, engaging black-and-white images than simply removing the colours.

First you need to choose the right subject, lighting and composition. Successful monochrome images rely on texture and detail, contrast and shape, so you need to be able to recognise when the subject in front of you will work when the colours are taken away. Then you need to use some simple software skills to enhance your black-and-white shots. This means using the tools in Photoshop or Lightroom to adjust how the different

colours in the scene are converted into shades of grey. It doesn't have to stop there, though, as you can also adjust the overall tones, exposure and contrast of your black-and-white image, and finally use selective adjustments to fine-tune the exposure and contrast in different areas of your image.

This final step isn't something new, as black-and-white photographers have been using image manipulation almost since the dawn of photography. But instead of being the preserve of a few darkroom gurus, these imaging techniques are now available to every photographer. So over the coming pages you'll learn how to find suitable subjects, convert your shots and finally fine-tune your images like a pro.







# ARCHITECTURE

The perfect combination of strong lines, intricate textures and bold forms makes architecture an ideal subject for black-and-white photography

**W**hen you are looking for potential black-and-white subjects, buildings have many of the perfect elements. The simple, graphic shapes that make up the structure of a building can produce excellent mono images, while the materials used in the construction will offer a range of texture and tones that work well in monochrome.

You need the right weather conditions when shooting outdoor architectural images. If you are including the sky in your shot it should contain interesting textures. A blue sky with some cloud is perfect as you can increase the contrast to create a strong, moody sky. In heavier cloud you can still get good results, but you should be able to make out detail and shape in the clouds.

Then you need to choose the right time of day to shoot. You need there to be some light on the building, but it doesn't necessarily need to be in full sunlight. The shadows cast by other parts of the building or other structures can help provide interesting contrasts and shapes, while overcast conditions will create a softer, more diffuse lighting, ideal for shooting details.

## TEXTURE AND DETAIL

Traditional building materials such as stone, wood and even brick are full of textures and detail that

work well in black and white. These materials are particularly interesting when there is strong side lighting to bring out the texture and detail in the surface. Alternatively you can look out for more modern materials such as glass or steel, which have a smoother, more uniform surface texture.



Bright light will bring out the shape of the building and the textures in the materials used to build it

These can offer a contrast to more traditional materials, or could be used in isolation.

When shooting reflective surfaces, such as glass or steel, you can have problems with bright reflections creating too much contrast. You can use a polariser to reduce reflections on glass, to help achieve a more uniform surface, but this won't work on metal surfaces. The best option is to shoot in more overcast conditions, so that there are fewer reflections.

## GRAPHIC SHAPES

From ancient structures to modernist architecture, buildings are full of strong, graphic elements that make great subjects for black and white. When looking for details and shapes that will work without colour you will often need to crop in on small areas of the subject, so you'll need to use a longer focal length lens than you would when shooting the whole building.

Look for compositions where you can isolate the details, excluding any areas that take attention away from the main area that you are shooting. You should also try different compositions for your details, from the traditional 'correct' viewpoint (ie keeping the uprights in the subject straight), to shooting with the camera angled to give the shot a more dynamic look.

## ESSENTIAL TECHNIQUE BASIC CONVERSION OPTIONS

If you are converting RAW images in Lightroom you will have to select the black-and-white conversion option at the top of the Develop module palette. This will simply remove the colour from the image, and may not give you the final result that you want. For full control over how the image is translated into black and white you need to use the Black & White Mix controls in Lightroom's HS/Color/B&W palette. In Adobe Camera Raw in Photoshop you will find the same options on the HSL/Grayscale tab – just tick the Convert to grayscale option at the top of the palette.

These sliders allow you to adjust how each colour is converted into a grey tone.

By dragging one of the colour sliders to the left it will mean that any area of the image containing that colour will be darkened, while dragging it to the right will give a lighter tone. For example, if you want to darken a blue sky in an architectural image, you should drag the slider marked in blue to the left.

Along with these sliders there's also the option of adjusting these tones by dragging on the area of the image that you want to alter. To access this you need to click on the small icon at the top-left of the Black & White Mix palette, then click on the area of the image that you want to alter and drag the cursor down to darken it and up to make it lighter.

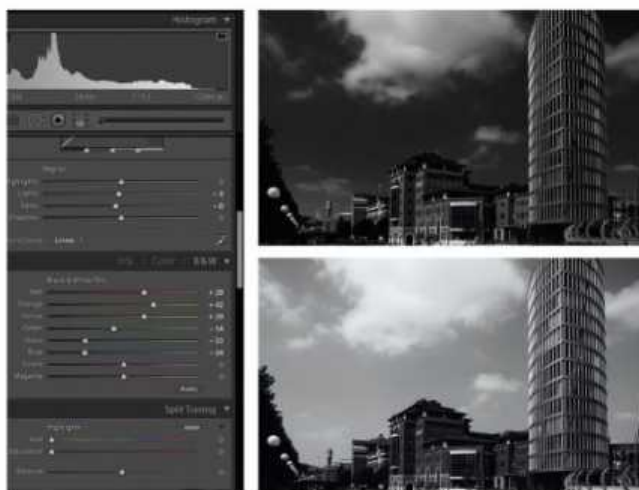








Image - Peter Travers (Future Owns)



# PORTRAITS

Black and white can create more intense and more characterful images – here's how...

Using black and white for portraits frees you from the distraction of colourful clothes or backgrounds and can help to focus more attention on your subject's character or face. You can influence the mood of the image by choosing different expressions and lighting, so you need to think about the style of shot that you want to achieve before you press the shutter.

As with any other subject, the key to successful black-and-white portraits is the lighting. Strong side lighting will emphasise the features and even imperfections of your subject, but give a stronger, more powerful result; while softer, more diffuse lighting will give a more subtle result, which is perfect for more flattering portraits.

## CLASSIC PORTRAITS

Using black and white for a portrait immediately gives a portrait a more classic feel, but you can add to this with some simple lighting techniques.

For a more flattering portrait, shoot in diffuse lighting. If you are lighting the subject with flash, use a large softbox or umbrella to soften the lighting, and position it as close to the model as possible. If you are using natural light, choose a location where the light is naturally softer, such

as under cover of foliage or in a bright yet shaded area. If you have to shoot in direct sunlight, use a reflector to bounce light back onto the subject to lighten the shadows, or place a diffuser (or even a white cloth) between the light source and the model to soften the sunlight. You can enhance this look by using the colour controls when you convert your images to lighten the red and yellow tones in your black-and-white image, which will reduce imperfections in the skin tones.

## CHARACTER PORTRAITS

Using directional lighting to create strong shadows is perfect for more characterful black-and-white portraits. The shadows will bring out the textures in the subject's skin, especially wrinkles, so this style of portrait isn't the most flattering. You may need to have a chat with your model to check that they are happy with this look.

## HIGH-KEY AND LOW-KEY

These two styles of black-and-white photo evoke very different moods. A high-key image contains mostly lighter tones, and gives the image a bright and happy feeling. The predominantly dark tones

of a low-key image, on the other hand, will appear much more sombre, serious and introspective.

To achieve a high-key look you need to shoot against a bright background. You can get this by shooting outside in available light, against a window or by using a light-coloured wall indoors. If you are shooting indoors you can brighten the background by lighting it with flash, and you should also make sure that the light on the main subject is soft, to avoid too many strong shadows.

The dark tones of a low-key image are easiest to achieve by shooting in a dark environment and then lighting the subject using flash. You need to control the lighting so that the background remains dark, and you can also make use of strong, directional lighting to get pronounced dark shadows on the subject.



Strong, directional light – from the sun or from a flash – is ideal for character-packed images

## ESSENTIAL TECHNIQUE DODGE AND BURN

Selectively altering the brightness in areas of an image is a technique that's been around since the days of the darkroom. It enables you to enhance the impact of your black-and-white shots, as you can bring out important areas and allow others to recede into the background. This is particularly useful when producing portraits, as you can use it to draw the viewer's attention to the subject's face.

There are several ways to dodge and burn, but in Lightroom or ACR you can use the Adjustment Brush to 'paint' over an area, then use the exposure slider to lighten or darken it. For more subtle adjustments you can alter the contrast, or use the Highlights or Shadows controls to affect only the light or dark tones of the area that you have painted over.

You don't need to shoot in RAW to achieve this effect, as you can get similar results with JPEGs in Photoshop or Elements. Here you can use the dodge tool in the Tools palette to lighten areas, and the burn tool to darken them. It's best to do these adjustments on a duplicate layer, so you can always revert back to the original, and to build up the effects gradually.



In our original portrait, the subject's white top competed for attention with her face, but after a bit of 'burning' to make it darker, the garment became darker and less of a distraction

# LANDSCAPES

From classic scenery to minimalist masterpieces, here's how to capture black-and-white landscapes

Photographers have been shooting landscapes in black and white since the dawn of photography. They've continued to do so because the play of the light and weather on the landscape means that it is the perfect subject for shooting in black and white. Unlike most traditional colour landscape photography, where you would try to shoot at sunrise or sunset to get the warm, golden tones in the sun and sky, you can get impressive black-and-white images at many other times of day and in wet weather conditions. This doesn't mean that the weather and light aren't important in monochrome (in fact they are just as important), but you can look at shooting in different weather conditions in black and white than you would in colour. This can be during the middle of the day, although black-and-white images can still benefit from the angled light from the sun low in the sky early or late in the day.

## GO FOR MOOD

When you're shooting landscapes, there are two types of weather conditions that are perfect for creating moody black-and-white images. The first is when there is strong sunlight, blue skies and ideally some fluffy clouds in the sky. This type of sky, along with sunlight illuminating the landscape, creates a high-contrast, colourful image. This may sound counter-intuitive when you are going to convert the image to black and white, but the colours in the landscape mean that you can easily boost the contrast and mood in particular areas when you convert the image to black and white.

The second is when the weather is overcast and stormy. This doesn't mean that any overcast day is suitable, as there needs to be some detail and contrast in the sky, but it's possible to shoot in conditions that make it difficult to get striking colour images. In these conditions you'll need to add some contrast to the image, as well as some dodging and burning to get the best results, but that's all part of the challenge.

## MINIMAL MAGIC

As well as capturing sweeping vistas, black and white is also perfect for shooting minimal landscape images. This works best when there is a strong focal point in the scene, which you can

isolate by excluding too many distractions from the composition. This is often easier to achieve using longer focal length lenses rather than short, wide-angle lenses.

Once you've found a suitable subject, you can also enhance the minimal appearance by using a very long shutter speed, such as 15 or 30 seconds, to blur the sky, water or even wind-blown foliage so it is less distracting in the final image. This can easily be achieved by shooting at dawn or dusk, when the light levels are low enough to allow you to use these long exposures without over-exposing. In daylight you will need to use a strong neutral density filter, such as a five- or 10-stop ND, to reduce the light enough to be able to shoot at these long shutter speeds (see page 66).

## DETAIL IN LANDSCAPES

While the wider landscape is a great subject for black-and-white photographs, you can also find many other perfect subjects if you look out for smaller details in the landscape to shoot. If you isolate trees, rocks or water, you can often find amazing shapes, patterns and textures, which can make striking black-and-white images, while there are also often limitless possibilities around your feet in the sand, grass or foliage that you would otherwise simply trample over to take a normal landscape picture.



Crop out any unwanted distractions when shooting minimalist images – a long lens is often best for this





## ESSENTIAL TECHNIQUE USING FILTERS

Creating punchy, moody black-and-white landscapes isn't just about waiting for the right weather; you can also use filters to add impact to your shots. A polariser will increase the contrast in the sky when there are clouds against a blue backdrop. As you rotate the filter you should see the sky darken, but you need to be careful to avoid an uneven effect when using wide-angle lenses. A polariser can also give more punch to the foliage in your landscapes, and remove reflections from water. The other filter that can be useful, especially in stormy, conditions, is an ND grad. This will allow you to darken the sky for a more moody result.



You don't have to wait until the post-production stage to add punch to a sky: fit a traditional polarising filter to your lens and you'll be able to darken blue skies so white clouds stand out in contrast, while if you're faced with completely overcast skies, an ND grad filter will darken the clouds and give a marvellously moody feel

# STREET PHOTOGRAPHY

From your home town to an exotic location, black and white will emphasise the effects of light, shadows and graphic shapes in your street photography

**Y**ou'll often find that shooting in black and white rather than colour will help reduce many of the distractions that can weaken the impact of your street photographs.

For example, shooting in colour, a bright red sign in the background of a shot will be obvious and distract from your main subject. But in black and white, the same sign will be recorded as grey or black, and will blend into the background much better than in colour. So, simply converting your street images to monochrome can help



Strong shadows add drama to monochrome street scenes, while people give shots a sense of scale

you achieve simpler, more striking results. But there are also plenty of other ways that you can improve your black-and-white street images.

## LOOK FOR SHADOWS

The strong, graphic shapes created by shadows of people, buildings and street furniture make great subjects for black and white. The shadows will be longer early or late in the day, so these are ideal times to get out and shoot monochrome street scenes. When shooting these shadows you can either keep the subject that created them in the frame to give some context, or crop your image so that it only contains the shadow for a more abstract result. When you are shooting shadows you may need to under-expose the image by a half to one stop to make sure that the shadows are recorded as dark black, for the greatest impact.

## SHOOT INTO THE LIGHT

Another great reason to shoot early or late in the day, when the sun is lower in the sky, is so that you can shoot into the light (also known as *contre jour*). This technique is perfect for creating high-contrast black-and-white images, often with strong shadows. When you are shooting into the light it's often impossible to keep detail in both the highlights and the shadows of your images, so you have to decide which is the most important. If you want deep shadows plus plenty of highlight detail, under-expose by a half to one stop. This is perfect for subjects that will work as silhouettes,

or where you don't want any detail in the shadows. The alternative approach is to let the highlights become over-exposed, but keep more detail in the shadows by over exposing by around one stop. This will produce a brighter shot, which emphasises the light flooding into the scene.

## PEOPLE POWER

Including people in your street scenes adds a sense of scale and location, and you can also use them as focal points in your images. If the people are static, then all you need to do is pick your composition and shoot, but in a busy city this isn't always possible. When the people are moving you can either freeze their movement with a short shutter speed such as 1/30 sec or faster, or use a slower shutter speed to add some blur.

If you are freezing the movement it can take several shots and perfect timing (or a little luck) for the figures to be perfectly positioned in your composition, so be prepared to wait a little while to get the perfect shot. Blurring the movement will give the scene a more eerie appearance, but can also give it a sense of bustle. You'll need to use a shutter speed of around 1/4 sec for fast-moving crowds, or even longer if the figures are walking slowly. A tripod is the best solution for avoiding camera shake when using this technique, but if you don't have one with you (which is often the case with street photography) try supporting the camera on a solid surface, such as a wall, fence or bollard, and take several shots in a burst to ensure you have one that's sharp. ■

## ESSENTIAL TECHNIQUE SEEING IN BLACK AND WHITE

One of the key skills that you need for successful black-and-white images is being able to 'see' how the colour scene in front of you will translate into black and white. This can be a tricky skill to master, but you can get a helping hand by setting your Nikon to the Monochrome Picture Style. This will allow you to review the images that you have shot in black and white to give you a better idea of how they will appear. You can also get a preview of the black-and-white image by using Live View mode.

If you shoot in JPEG format the images will be recorded in black and white, but if you select RAW then the image will be recorded in colour. If you open this RAW file in Nikon View NX2 or Capture NX-D they will appear in black and white, but you can change the Picture Style in the settings to revert to a colour image). If you open the RAW file in any other RAW software, such as Adobe Camera Raw or Lightroom, the image will revert to colour and you will have to convert it to black and white using the software controls.









# SLR TECHNIQUES





# 15 FRESH IDEAS FOR BRILLIANT LANDSCAPES

Landscapes looking flatter than a prairie? Try Nikon professional photographer **Tom Mackie's** fantastic ideas for breathing new life into your landscape and nature photography



## SLR TECHNIQUES

## 01

GET CREATIVE  
WITH SCALE

## WHAT'S THE BIG IDEA?

How often have you looked at a photo of a waterfall and had no idea if it was three or 30 feet tall? When you want to show the size of something, you must include an object that is a known size to give the image scale, and then everything becomes clear.

One way to add a sense of scale to images is to place an object close to the lens with the rest of the scene in the background. This is a classic near-far technique used to add depth in landscape photography. The only problem is that it usually requires the use of a wide-angle lens, which will make the close object look large in the frame and the background appear much smaller.

“WHEN YOU WANT TO SHOW THE  
SIZE OF SOMETHING, INCLUDE AN  
OBJECT THAT IS A KNOWN SIZE TO  
GIVE THE IMAGE SCALE”

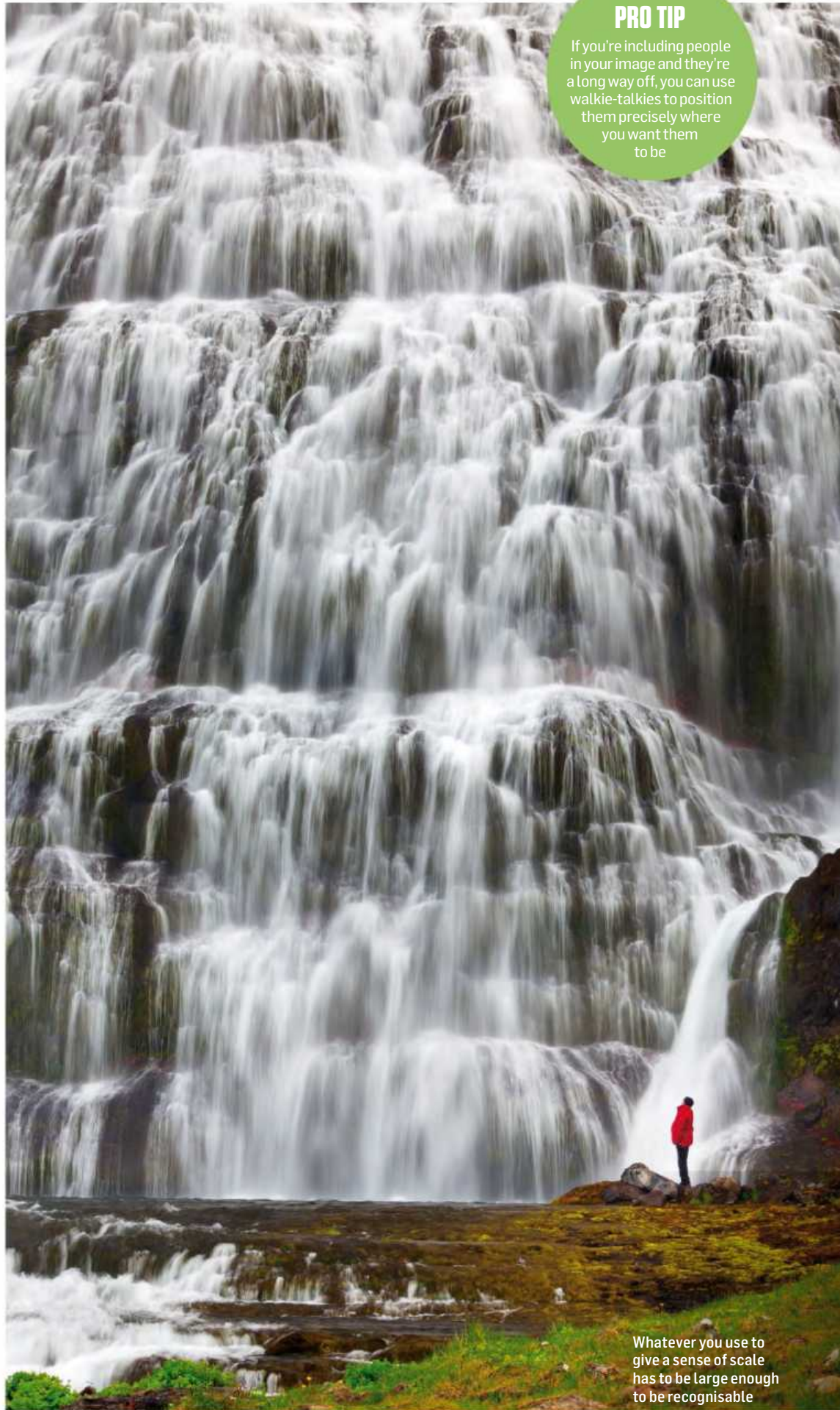
The best way to emphasise your subject by using scale is to use a telephoto lens to compress the scene. This will keep the main subject large within the frame, then, when you place a smaller element in the scene that provides a sense of scale, the viewer will get the full impact of the scene.

## WHAT'S THE KEY?

The key to this technique is a well-placed element to contrast with the main subject. It won't be as effective if the element is so small that you have to search for it, or if it's placed against a matching tone so it blends in. In this image of Dynjandi waterfall in Iceland, I chose to use a 70-200mm lens set at 70mm to crop in tight on part of the waterfall. If I had included the entire thing, which was twice the size of what is shown here, the person would have been so small that you wouldn't see him, defeating the point of using scale. I composed the scene so that he was placed in the lower third of the frame against the white section of the waterfall. A red coat also stands out much more than a green or blue coat would.

## PRO TIP

If you're including people in your image and they're a long way off, you can use walkie-talkies to position them precisely where you want them to be



Whatever you use to give a sense of scale has to be large enough to be recognisable



# 02

## LOOK OUT FOR COMPLEMENTARY COLOURS

### WHAT'S THE BIG IDEA?

Summertime is bursting with complementary colours such as red poppies with green grass, a yellow sunflower against purple irises and a deep orange sand dune leading to a blue sky, as shown below. Putting these colours together will create striking images, but first let's understand the basic principle behind complementary colours so it will help you identify subjects when you are out shooting.

If you take any of the three primary colours (red, blue and yellow) and mix the other two colours together, the resulting colour is the complementary colour of the primary colour. So, to get the complement of red, mix yellow and blue together to make green. To get the complement of blue, mix red and yellow together to get orange. To get the complement of yellow, mix red and blue together to produce purple. Look at a colour wheel: any colours that are opposite each other are complementary colours. When you use them together in an image, it creates a striking colour contrast that will make your image pop. Complementary colours are used all the time in advertising to make the ads stand out.

### WHAT'S THE KEY?

The key to this technique is recognising which colours will work together, and executing the shot in a way that makes these colours as bold as possible. In this image of a sand dune in Monument Valley, I used a polarising filter to saturate the colours more. The side lighting not only enabled maximum polarisation, it also brought out the patterns in the sand. This has helped to create an image that leaps off the page and demands the viewer's attention.



## SLR TECHNIQUES



# 03

## CROP IN TIGHT ON DETAILS

### WHAT'S THE BIG IDEA?

You don't have to travel far to capture great landscape images – sometimes, your own back garden may be far enough. There might not be scope for a traditional wide-angle landscape, but if you take the time to look closer at details, you can create interesting images. Details of plants and flowers in your garden can take on a very different look when you crop in tight. When composing your image, look for patterns and design in nature.

When you're travelling further afield, don't forget to look closely for details that will sum up the place in one photo. Elements that are evocative of a location, such as local fruit or

spices, colourful hats, handmade blankets, shells or other natural elements can make striking images. I think of making photographs in terms of telling a story about a place. What is it that the location is particularly known for?

### WHAT'S THE KEY?

I prefer to crop in camera when I take my close-ups, rather than cropping in post-production. This way you are capturing the most information possible, instead of throwing some of it away afterwards. The beauty of taking close-ups of details is that you can use just about any lens. Many telephotos will focus fairly close to eliminate distracting elements and concentrate solely on the details. Normal lenses will easily focus close-in, and even wide-angle lenses can get really close to the subject to create an unusual perspective.

In this image of a white picket fence and traveller's palm I wanted to show the contrast between man-made and natural patterns. The image on the left was shot with a normal lens and doesn't work photographically. Not satisfied with this attempt, I changed lenses to a short telephoto to crop in tighter on just the details I wanted to show, eliminating the distracting elements behind the palm.

## GEAR UP ROCK STEADY

■ All of the images on this spread required a sturdy tripod. When using a telephoto lens, you are more susceptible to camera shake, which will result in less-than-sharp images. The longer the focal length, the greater the susceptibility. Also, if your lens has vibration reduction, turn it off when using a tripod because the gyros inside will try to stabilise the image and may cause a slightly soft image. If you are including a lot of foreground using a wide-angle lens, as with the sand dune image left, you will most likely need to use a smaller aperture. This will require a slower shutter speed so a tripod is again a must. Close-up images need exact framing so unwanted elements don't creep into the frame. A tripod will allow perfect framing every time.



## SLR TECHNIQUES

## 04

## SHOOT RIGHT INTO THE SUN

## WHAT'S THE BIG IDEA?

You've probably been told never to shoot into the sun, and it was not that long ago that film and camera manufacturers were telling us to keep the sun at our back in order to get a good exposure. This advice is partly correct, but it tends to produce boring, flatly-lit landscapes. Shadow-free landscapes are easy to expose for, but the lack of contrast will result in a lifeless image. My favourite types of lighting are backlighting and side lighting. Shooting into the sun can produce dramatic results, with sunbursts and lens flare to add depth and help direct the viewer's gaze.

Shooting into the sun has its issues, though. The main problem is the increased contrast. Then there's knowing how to meter this tricky lighting situation, as well as potential problems with flare, but there are ways to overcome all this.

## WHAT'S THE KEY?

Let's talk about controlling contrast first. When you point your Nikon at a sunrise or sunset, the sky will be very bright and the landscape very dark. The easiest way to resolve this is to use

Sunbursts can be captured by setting a small aperture



## PRO TIP

A sunburst effect can be achieved by pointing your camera directly at a point source of light. The smaller the aperture, the more obvious the effect

graduated neutral density filters. These come in varying degrees of density and transition. For this image of the standing stones of Callanish, I used a three-stop, soft ND grad over the sky to stop it from blowing out. A soft grad works better when you're shooting an uneven horizon like this; if you use a hard grad the filter will darken any object above the horizon line, making it more obvious.

When metering a scene like this, I also apply some exposure compensation. This is because a D-SLR's metering system will always try to render a scene as an average mid-tone by default, which in a shot like this will result in bright skies turning a murky mid-grey. The solution is to over-expose (ie let in more light) to compensate. One stop of over-exposure (+1EV) is a good starting point. In

this case the sky was so bright I had to overexpose by 1.7 stops (+1.7EV) in order to ensure the sky was bright enough (but without being blown out).

Finally, lens flare can sometimes be a bonus, acting as a leading line that directs the viewer through the image. At other times, though, it can distract from the main subject. To help combat flare, keep your lenses clean and use a prime lens. Even though today's zoom lens technology and special coatings help reduce lens flare, a prime lens has fewer elements for light to go through, so there is less chance of it producing flare. If needed, shield the lens with your hand or use a lens hood. Sometimes, however, there isn't any way to avoid the sun shining into your lens, so you will have to remove any flare in Photoshop.

## 05

## KEEP IT SIMPLE!

## WHAT'S THE BIG IDEA?

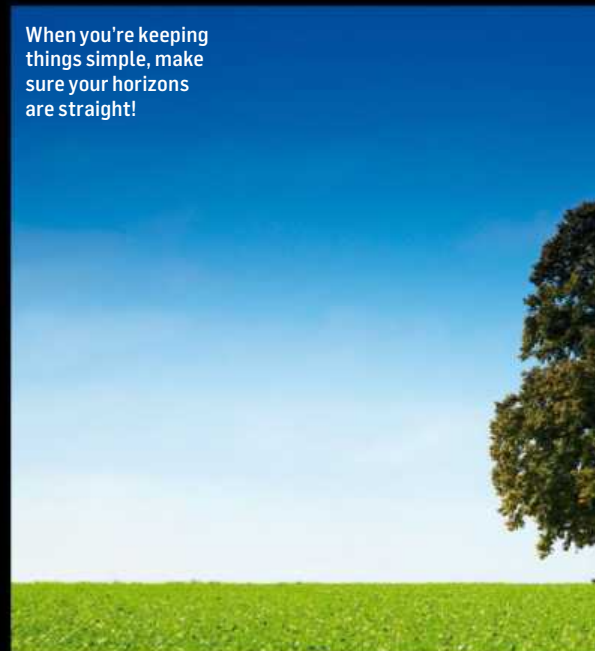
When photographing a landscape, it is very easy to slap on a wide-angle lens to take in as much as possible. This is exactly what I try to avoid. Including too many elements in one image is confusing to the viewer and will result in a shot that lacks overall impact. I like simple, graphic compositions, and am a firm believer that less is more. Have you heard of the KISS method? It's an acronym for 'Keep It Simple Stupid', coined by head engineer Kelly Johnson at Lockheed Martin's

'Skunk Works', which designed the U-2 and SR-71 spy planes. Johnson wanted his engineers to "keep a design simple and stupid". If you look at all of the images in this feature, they all have one thing in common: uncluttered composition.

## WHAT'S THE KEY?

When you look at a scene, determine what the main subject is. If this isn't evident, then you should think again why you are taking the photo. Now look around the subject and remove anything that isn't important, or that doesn't reinforce the composition. You may have to change your angle or lens to do this. I often use a 70-200mm lens to crop in on just the elements that I want to include within the frame. When I simplify the scene down to the main elements, I find that I can create several images by varying the composition. I can place the horizon low or high, make the image horizontal or vertical or place the subject on different intersecting points using the Rule of Thirds. This is a good exercise in composition.

When you're keeping things simple, make sure your horizons are straight!





## SLR TECHNIQUES

## 06

GET CREATIVE  
WITH CLOUDS

## WHAT'S THE BIG IDEA?

Clouds are an important part of landscape photography, yet are often overlooked when it comes to creating an image. Like supporting actors in a film, they can add drama and emotion, they can direct the viewer to the main point of interest, and they can support or balance the main subject. To extend the film analogy further, without them the entire production can be at risk of deletion from our memory cards.

The type of cloud can also play an important part in creating a successful landscape image. On countless occasions I have gone out to shoot a sunset, only to conclude the clouds are the wrong type to produce a spectacular image. It's important to have the right type of cloud; whether it's cirrus, cumulus or lenticular, the right type of cloud can make or break a landscape image.

## WHAT'S THE KEY?

The key to getting creative with clouds is to make sure you not only have the right clouds, but that they are in the right place. I have waited ages for clouds to drift into the correct position within the frame. In fact, I waited four years to get the right cloud over this lone olive tree in Tuscany! I do a workshop there every year and have always wanted to photograph this single tree, but never had the right clouds present – that is, until last year. But I still had to wait a while in this field until a single cloud drifted directly over the tree. I could have put one in using Photoshop, but I prefer the get it right in camera whenever possible.

The angle at which clouds are moving also impacts on your images. Look for ones moving in the right direction to complement the angle of any buildings, or at an angle that helps to pull the viewer's eye down to the ground.

Finally, there is an unwritten rule about using clouds: small fluffy cumulus clouds like the one over the tree here shouldn't intersect major elements within the frame, or be cut off by the edge of the frame. This isn't quite so important with more extensive clouds, or flatter, more horizontal clouds such as stratus or cirrus clouds, but it's still worth bearing in mind when composing an image.

You might have to wait a long time for the right cloud, but it's worth it

## IT'S IN THE POST DETAILS

■ With digital technology, it's as important to be adept behind the computer as it is behind the camera. As long you can capture as much information as possible in the field, then you should be able to bring it out in post-processing. Controlling highlights is an area that every photographer needs to be proficient with, and there are many ways to achieve this. I find the easiest way is to move the Highlights slider in Lightroom to the left to recover any blown highlights.

I often use the 'detail extractor' in Nik Color Efex Pro 4.0 ([www.google.com/nikcollection](http://www.google.com/nikcollection)) to bring out detail in clouds. You have control over the amount of detail you want to show, but be careful not to overdo this, as it can look a little unreal.





## PRO TIP

The radial filter tool in Lightroom is typically used in portraits to create a subtle vignette around a subject, but you can also use it to isolate other subjects



Lines of crops and plants are perfect for directing the viewer's eye

## 07

## ISOLATE YOUR SUBJECT

## WHAT'S THE BIG IDEA?

As photographers, it's our job to define the subject in our compositions. This may sound easy, but when a scene is cluttered with many conflicting elements, it's easy to confuse the viewer.

An effective method for creating a strong composition is to isolate your subject. I often use this technique for travel images, throwing the background out of focus so it doesn't distract from the subject, but is recognisable enough to give a sense of place. Sometimes there's so much going on in a scene that in order to make the subject stand out you have to isolate it using one of the techniques described below.

## WHAT'S THE KEY?

There are several ways to isolate your subject so it stands out from the rest of the scene. Try placing

the subject in the centre of the frame to call attention to it. Make sure there are no competing elements around it so the viewer's eye isn't pulled in different directions. This is what I did with lavender field and lone tree in the picture above. I purposely put the tree right in the centre of the frame, carefully placing the lines of lavender so they enter from the corners. This draws the viewer's eye straight to the tree.

Selective focus is another technique that is very easy to execute. All you have to do is get close to the subject and use a wide aperture such as  $f/2.8$  or wider. This is one reason why portrait and sports photographers use fast lenses with maximum apertures of  $f/2$  or even  $f/1.4$ . It enables them to throw the background completely out of focus, so all of the attention falls on the subject.

The perspective can have also a major effect on isolating the subject. Choose a high angle to place the subject against a plain background, or a low angle to use a plain sky as a clean, clutter-free background as I did in this image.

You can use also selective lighting in low light conditions by painting your subject with light so it stands out from the dark tones of the scene. You can get really creative by using various coloured gels over your light source to create a strong colour contrast.

Finally, get close to the subject or zoom in to fill the frame with the subject so it dominates the frame. This creates a graphic, bold composition, and by definition eliminates any distractions.

IT'S IN THE POST  
SPOT COLOUR

■ There is a quick and easy technique that can be used in post-production to isolate your subject and that is also a graphic use of colour. It may be a bit of a cliché, but is still very effective. Simply keep spot colour on the main subject while desaturating the rest of the scene. You have probably seen this technique used with a bright red double-decker bus against a black-and-white background, or in wedding photos to highlight the colours in a bouquet.

First make a quick selection of your subject in Photoshop using the lasso tool (the magnetic lasso can make things easier if your subject is something with a detailed outline, such as a tree). Hit Shift + Cmd/Ctrl + I to invert the selection, then choose Image > Adjustments > Hue/Saturation and move the Saturation slider all the way to the left to remove the colour from the background. For a subtler effect, try reducing the saturation in the background, but not removing the colour entirely.



## MAKE THE MOST OF SYMMETRY

### WHAT'S THE BIG IDEA?

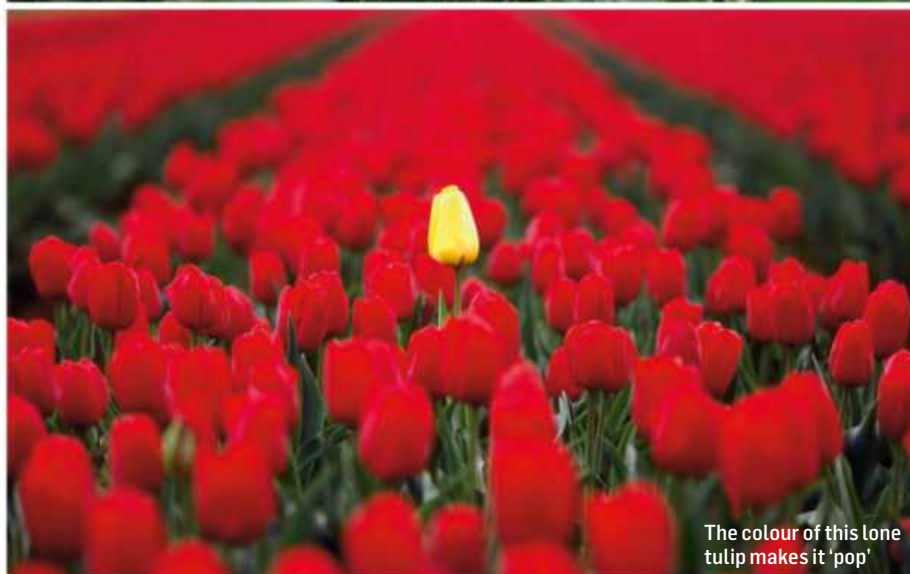
Symmetry is when you can divide an image in two and get a mirror image on either side of the line. Nature is good at creating symmetry – one obvious example is a reflection in a lake. The dividing line between the two halves is called the 'line of symmetry'. We are naturally fascinated with symmetrical patterns, and a photograph of a symmetrical location, with equal elements on either side, draws the viewer in to explore the scene in more depth.

You can have vertical and horizontal symmetry within a frame, and sometimes both in one image.

### WHAT'S THE KEY?

It is easy to find symmetry in architecture, but you may have to search for it in nature. Reflections are the obvious example, but there are many other natural examples, such as this image of a starfish in the surf. I positioned the starfish in the centre of the frame and watched as the wave hit it. I didn't imagine the image that I ended up with when I slowed the shutter speed down from 1/200 sec to 1/80 sec in order to get a little movement in the wave. It created a perfect foamy envelope, but you can still see the starfish underneath. The photograph is vertically symmetrical if you draw a line from the top to the bottom through middle of the starfish.

The key to creating symmetry is to make sure you position the subject in the centre of the frame, with any elements placed exactly the same distance apart from each other.



## 09

## BE CLEVER WITH COLOUR

### WHAT'S THE BIG IDEA?

Most of us see the world in colour, but using colour in a graphic way will demand attention of your viewers. Understanding how our emotions react to colour can really help in creating compelling images. You can often find colour contrast in nature and certainly in architecture, but there is nothing to say you can't create your own compositions. Try putting two primary colours together; lie down in a field of poppies and shoot them against the deep, blue sky, for example.

### WHAT'S THE KEY?

Simplicity in design is the key to capturing striking colours, and often moving in close to your subject will help you achieve this. With this image of the single opened sunflower (top), I used a telephoto lens to crop in tight on the flower, showing only the unopened flowers around it. I extended the tripod as high as possible and angled the camera down in order to eliminate the distracting sky. The brilliant yellow against the muted green brings the whole idea together.





A panorama is a great option for a very horizontal subject like this

# 10

## CAPTURE A PANORAMA

### WHAT'S THE BIG IDEA?

When you are on your travels this summer, don't ignore official scenic viewpoints just because they're obvious. But instead of putting a wide-angle lens on your camera, which will make everything appear very small, try using a normal or telephoto lens to shoot several images and then stitch them together using Photomerge in Photoshop, or another stitching program. Most of the images we look at tend to be in a 3:2 ratio, so when we see a wide-vista panorama, it commands our attention to study it longer. But before you start clicking away, it's worth going through a procedure that will help make creating panoramas very easy.

### WHAT'S THE KEY?

This technique works best if you use a tripod. First level the tripod, then level the camera. It helps if your tripod has a bubble level on the neck; disregard the ones on the head. I use an inexpensive hotshoe spirit level to align my camera. Set an exposure for the average light across the scene. Use manual focus and manual mode so that all the exposures in your sequence

are consistent. Set the white balance to daylight, again for consistency.

Shoot a series of images, allowing them to overlap by at least a third so there is enough information to stitch them together. Focal lengths of 50mm or longer are better as there will be less distortion than with wide-angle lenses and you can bring the details of the scene closer to you. If the light isn't changing quickly and you have time, shoot in vertical orientation to make more use of the sweet spot of the lens. It will also result in larger files, giving you no problems if you want to make large prints.

For this shot I was quite a long way from Iguazu Falls, so I used a focal length of 145mm to zoom in on just the falls. I made eight vertical exposures at 0.5 sec each to obtain the silky water effect. I also used a polarising filter to saturate the greens by removing the reflections from the foliage. When I

stitched the images together later in Photoshop's Photomerge, there wasn't any distortion because I used a long focal length.

Objects moving during the pan series can be an issue. If you have anything that is moving through the scene, it may end up being in several of your images. When you stitch the images you may end up with something like the same person walking through the scene. The software sometimes removes all but one, though you still may have to retouch others out. Coastlines present a different problem: moving waves. If you are quick enough shooting your series you might be lucky and have your waves stitch together. If you are including crashing waves it does get trickier. In that case, I allow space in a single frame so I can crop it to a panoramic format. As my Nikon produces 36-megapixel RAW files, that isn't a problem because I can still end up with a 70MB file.

## GEAR UP USE YOUR HEAD

■ You don't need an expensive and cumbersome panoramic tripod head to shoot panoramas, just a ball head with a panning facility. An L-bracket with a quick-release plate will keep the centre of the lens on the rotation axis. This will eliminate any parallax distortion and make stitching easier.

Another piece of kit that makes life easier when creating panoramas is the Gitzo GS3121LVL Systematic Levelling Base (£190/\$280). This will only fit Series 3 Gitzo tripods, but if you shoot a lot of panoramas, it's worth the investment. The main benefit with the levelling base is you will not have to adjust your tripod legs if you are on uneven ground. You only twist the short column on the levelling base and adjust it using the built-in spirit level. It's very quick and easy.





## SLR TECHNIQUES

## 12

SHOOT A  
SILHOUETTE

## WHAT'S THE BIG IDEA?

Silhouettes can be very evocative. Sunset is the best time to create them, especially if you place your subject against a stunning sky. Our eyes can still see lots of detail in these lighting situations, but a camera sensor can capture a much smaller range of tones – where we might see some detail in a silhouetted subject, the camera will often just see deep, black shadow. Any subject can be used, as long as the shape of the subject is identifiable, and preferably very graphic.

## WHAT'S THE KEY?

The key to successful silhouettes is backlighting. Place the sun behind the subject or even shoot after the sun has set in order to achieve brilliant colour that will provide an interesting backdrop. Exposure can be a challenge because the camera's meter may want to underexpose the scene, depending on the ratio of dark to light areas. Generally, you will want to expose for the background. When I shot the fishing boat below, I overexposed by one stop so the sky and reflection wouldn't look too dark.

If most of your subject lies below the horizon, you run the risk of it merging into the dark tones. An example would be a tree in a field at sunset. If half of the trunk is below the horizon, you will only be able to see the top of the tree, which will look odd. The best way to solve this problem is to get as low as possible and move closer to the tree (using a wide-angle lens if necessary).

You should be able to use a low ISO, such as 100, as the background should be bright enough, and, of course, you should be using a tripod. In most cases, try to use the optimal aperture of f/8 unless you want to include a sunburst, when you need to use an aperture of f/16-f/22.



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## PRO TIP

Before shooting your panorama, photograph your finger pointing right; at the end, photograph it pointing left. This will help you identify the shots to edit later

Asymmetry creates a sort of visual tension, adding interest



## 11

INCLUDE SOME  
ASYMMETRY

## WHAT'S THE BIG IDEA?

I spoke about symmetry earlier. Asymmetry is just the opposite. Visually, it is more exciting because of the conflict between elements within the frame. The mind looks for order, but when there is this imbalance it creates tension and therefore, excitement.

Informal balance or asymmetrical balance is when one or more dissimilar elements are on each side of a given point in the frame. You can have one element close to the front of the camera and one in the distance. This size differential creates an informal balance.

## WHAT'S THE KEY?

In this image above, there are two obvious points of asymmetry. One is the imperfect cypress tree with the bulge, and the other is the displacement of the chapel and trees off-centre, with the imbalance of the crescent moon on the right side of the frame. Then there is the point of balance: tonal balance. If you think of dark areas of the frame having more weight than lighter areas, it would take more light tones than dark tones to create a balanced shot. Here, the weight of the dark silhouette is balanced by the twilight sky.





Lights give a sense of life to a town, and add warmth

# 13

## PHOTOGRAPH AT DUSK

### WHAT'S THE BIG IDEA?

Cities and villages come alive with lights and colour at night and distracting details such as cranes, wires and unsightly buildings seem to melt away in the background. Every holiday destination has something that will look great at night, no matter where you are in the world. A few classic subjects for night shoots are illuminated fountains, sculptures, castles, churches or cathedrals and market places.

### WHAT'S THE KEY?

There are numerous night photography techniques to try, but here are the key ones.

First, and most obvious: use a tripod plus a remote release to avoid camera shake. I prefer a simple cable release that doesn't require batteries, as batteries tend to go flat just when you need them, and that's a nuisance when you're out photographing landscapes.

There is a short window of time when the lighting is just right for dusk shots. This opportune time is about 20-30 minutes after the sun has gone below the horizon. It's when the lights come on and the sky is a deep blue. The prime shooting time is only about 10 minutes before the sky is too dark. When this happens the highlights in the lights start to burn out.

It is advisable to lock your mirror up and wait a few seconds before tripping the shutter to avoid possible vibrations from the mirror. In this image of Manarola in Cinque Terre, Italy, I used the optimal aperture of f/8 which resulted in an exposure of 30 secs using aperture-priority

mode. An exposure of 30 seconds is normally the longest exposure available in 'auto' modes; if you require longer exposures, shoot in manual mode.

If you are in a landscape away from the city lights, try photographing a sky full of stars over your scene. This requires you to use a high ISO such as 1200-3200 – the exact setting will depend on the phase of the moon. If the landscape is lit by a full moon, I have used an ISO as low as 400, but generally you will see more stars if there is no moonlight. Set your lens to infinity, and turn off the autofocus. Your aperture will need to be set as wide as it can go, using the widest lens you have. The key to this type of photograph is to have an interesting foreground to silhouette below a sky full of stars.

**“THIS OPPORTUNE TIME IS ABOUT 20-30 MINUTES AFTER THE SUN HAS GONE BELOW THE HORIZON, WHEN THE LIGHTS COME ON AND THE SKY IS A DEEP BLUE”**



## LOOK FOR SHAPE AND PATTERN

### WHAT'S THE BIG IDEA?

Shapes and patterns are important elements in landscape photography. They create visual rhythm and harmony that brings impact to an image. If you think of any shape or pattern, the basis of these elements are lines. Line is the structure of all photographs, either in a subtle or obvious way. When you use lines creatively in a composition they can evoke different emotions: diagonal lines suggest action and movement, horizontal ones create a sense of tranquility and peace, and vertical lines suggest a feeling of power and strength.

“DIAGONAL LINES SUGGEST ACTION AND MOVEMENT, HORIZONTAL ONES CREATE A SENSE OF TRANQUILITY, AND VERTICAL LINES SUGGEST POWER”

When lines form a clear pattern, they can create a more successful image. Patterns are everywhere in nature and man-made objects.

### WHAT'S THE KEY?

The key to finding patterns is to explore a variety of different angles in order to seek out any repetition. Lens choice will make a huge difference in how well the patterns are captured. Depending on the scene, I find a medium-to-long telephoto works well to compress the patterns, as was the case with the wind turbines here. When you combine patterns with great light, it only reinforces the composition. I chose early morning light on the white turbines so they would transform into gold against the polarised blue sky. I chose a short enough shutter speed (1/4 sec) to blur the rotation of the turbines and add an element of motion. This created an interesting shape that made them look like pinwheels.



### PRO TIP

You can add a twist to a classic canopy shot like this by setting a slow shutter speed and spinning your camera round or zooming in as you press the shutter release

## 15

## DON'T FORGET TO LOOK UP!

### WHAT'S THE BIG IDEA?

It's very easy to photograph what's in front of us, as our eyes scan from left to right searching for compositions. However, often looking up can be all it takes to shoot more dynamic images. Whether you are walking through forests of towering trees or large, skyscraper-packed cities, you can create unusual images by pointing the camera to the heavens.

### WHAT'S THE KEY?

The key to this technique is utilising dynamic lines as much as possible. With this image of the giant redwoods in California, I wanted to show the pattern of lines that these trees create, as they are the tallest trees in the world. I mounted my Nikon D800 with a 14-24mm lens set at 14mm to accentuate the lines. The hardest part was cranking my neck to see the display using Live View! It took some minor adjustments in the framing to ensure that there were even patterns coming in from all the edges of the frame. Because the forest was so dark, I needed to use positive exposure compensation, and overexpose the scene by one stop, otherwise the dark trunks would have come out too dark. I've tried this same technique in cities. ■

## IT'S IN THE POST NOISE REMOVAL

■ When you use high ISO's to capture a night sky full of stars, or if you are fortunate enough to photograph an aurora, you are likely to get noise in the file, depending on the ISO capability of your camera. The Nikon D3s is probably still the best camera on the market that produces little noise at high ISOs. Even with the high-resolution Nikon D810 that I currently use, the noise is minimal at up to ISO1200. However, I will often use ISO3200 to capture the night sky, so the noise is more apparent. In Lightroom, Luminance Noise Reduction does a great job of reducing noise, though take care if you move the slider past 50, as the fine detail will go soft – use the detail slider to bring it back.

Another very good piece of noise-reduction software is Nik Define 2. The algorithms work very well to reduce noise and retain detail at the same time.

## 37



# THINGS PHOTOGRAPHERS DO WRONG... AND HOW TO STOP DOING THEM

Photos soft? Exposures off? Compositions not working? Read on to discover how to fix the most common photography problems, fast!

**I**t's impossible to learn the art of photography without making a few mistakes along the way, but if you find yourself doing the same things wrong every time you pick up your camera, it's probably worth getting to the bottom of it. To help you, we've come up with 37 common problems that Nikon photographers are likely to encounter, and suggest ways that you can overcome them.

Over the next ten pages, you'll find advice for working out why your shots might be slightly blurred, why they

might be darker or brighter than you expected, and why your composition could be letting you down. We've also compiled a list of other familiar camera-setting complaints and photography slip-ups that are sure to frustrate you at some point.

Whether you're just starting out or you're a Nikon old hand, you'll find lots of useful tips for helping you get to the bottom of your workflow woes, and getting to grips with the features available on your camera. And if you still have questions after all that, you know where we are...





## FOCUSING



BEAT IMAGE BLUR **p56**

## EXPOSURE



TAKE CONTROL OF TONES **p58**

## COMPOSITION



ADD IMPACT TO IMAGES **p60**

## CAMERA ERRORS



WE'VE ALL DONE IT! **p62**

## LIGHTING & PROCESSING



FINISHING TOUCHES **p64**

# FOCUSING WHY ARE MY SHOTS BLURRED?

*Here are the top reasons why your photos aren't sharp, and what you can do about it*

## 01 NOT TAKING CONTROL OF THE AF POINT

Don't leave it up to the camera to decide where to focus. It won't know which feature you want to be sharp in the picture, and if there's something in front of the main subject, or the background is detailed, or there's not a great deal of contrast between the main subject and the rest of the picture, then your Nikon may focus on these and not the subject.

You'll get more consistent results if you tell your Nikon which part of the frame you want to focus on. For absolute precision, choose a single AF point. The centre spot is the most sensitive, although not best-placed for the most dynamic compositions. For an off-centre subject, you'll need to use the 'focus and recompose' method: point the central AF point on the subject, half-press the shutter release to lock the focus, and then recompose the shot.

Alternatively, use an off-centre AF point that corresponds with the positioning of the subject in the frame. This is the best option if you're taking pictures at close quarters; if you opt for the focus-and-recompose method instead, the shift in camera position can mean that the point you locked focus on is now at a different distance relative to the position of the sensor, and may actually be blurred.



## NOT KEEPING AN EYE ON THE SHUTTER SPEED

The rule of thumb for handholding is to set a shutter speed equivalent to (or faster than) one divided by the focal length you're shooting at, so that's 1/50 sec when shooting at 50mm, 1/400 sec at 400mm and so on. But your hit rate may vary when it comes to keeping a lens still at these shutter speeds. Vibration Reduction (VR) lenses make a

difference at slower speeds, but will have no effect on any subject movement.

If in doubt, use a shutter speed that's twice as fast – you may need to increase the ISO, but better to have a sharp, grainy shot than a blurred one. If your subject is moving, you might have to go even faster – even if you're able to eliminate camera shake, if the shutter speed isn't fast enough to 'freeze' the movement, your subject will end up looking blurred.



## 02 NOT WORKING HANDS-FREE

A tripod is the best way to ensure sharp photos at very slow shutter speeds, but even the sturdiest set of legs may not prevent details from looking smudged if the camera isn't perfectly stable. The action of pressing down on the shutter release button can jog the camera, so it's worth triggering the shutter with a

remote release, or using the self-timer or exposure-delay function for pictures that aren't time-sensitive.

Vibrations caused by the mirror moving (to expose the sensor to light) can also lead to soft shots. To remedy this, use the camera's Mirror Up (MUP) mode or activate Live View, as the mirror is moved out of the way in Live View.





## NOT USING THE OPTIMUM APERTURE

04

Although there will be situations when you want to use a large aperture to help you separate a sharp subject from a blurred background, there will be other times when you want more of a scene to appear sharply focused. It might be tempting to reach for the smallest aperture on the lens, but this actually leads to softer pictures due to the effects of diffraction – essentially incoming light rays being bent out of shape by the aperture blades, which is more noticeable at small apertures.

It's often preferable to sacrifice some depth of field in order to deliver an image where details are pin-sharp. This is often in the middle of a lens's aperture range – typically around f/8 to f/11, although this varies from lens to lens.



An aperture of f/22 may not give bitingly sharp results thanks to the effects of diffraction, whereas an aperture of f/5.6 may not offer enough depth of field for a scenic shot

## ZOOMING THE LENS AFTER YOU FOCUS

Most of the zoom lenses made today aren't in fact true zooms, or what are known as 'parfocal' lenses; rather, they're 'varifocal' lenses. One of the drawbacks of this type of design is that the focus shifts as the lens is zoomed. This means that if you zoom in to lock the focus on a detail within a scene and then zoom back out to take a shot, there's a good chance that the detail you want to appear sharp will now be blurred.

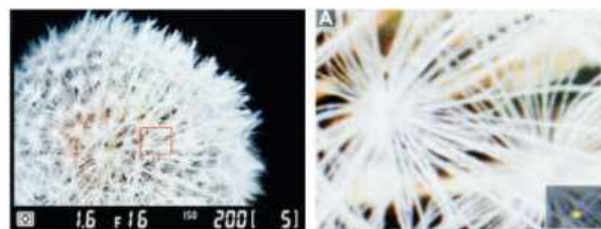
If the zoom range isn't too great, the change in focus may be subtle. Using a small aperture to give a large depth of field – the amount of front-to-back sharpness in a picture – can also mask any focus shift. But the easiest way to prevent this is to get into the habit of only focusing after you've zoomed. Once it becomes part of your shooting regime you won't even have to think about it.



## NOT MAKING THE MOST OF MANUAL FOCUS

When you use autofocus, there are a number of links in the chain that can break, leaving you with soft pictures. For instance, a lens may suffer from a back-focus or front-focus issue, where the sharpest focus is actually fractionally behind or in front of the edge that your AF point has locked onto. Nikon's AF Fine-Tune function can help remedy this somewhat, enabling you to compensate for a specific lens's AF performance with a specific camera.

For this reason, for critical work where focus is everything, such as macro photography or landscapes, manual is the way to go. Live View potentially makes this a piece of cake, allowing you to magnify details to 100 per cent. However, some cameras use so-called 'interpolation' to create the magnified view, resulting in a Live View image that's not particularly sharp, and therefore harder to judge accurate focus on. One option here is not to magnify the image too far. Alternatively, shoot in RAW and then fine-tune the Picture Control setting to produce a sharper, higher-contrast preview image that's easier to judge focus 'snap' on – shooting in RAW rather than JPEG means the image will be unaffected by the effects of the Picture Control setting.



Live View can make focusing manually easier, although zooming too far into the image can actually make it tricky to evaluate sharpness

## NOT USING THE CORRECT AF MODE

Nikon D-SLRs have three autofocus modes: one for stationary subjects, one for moving subjects, and an AF-A mode that automatically switches between the two, depending on whether the camera detects movement and decides that your subject is mobile. However, cameras don't always get it right, so for absolute peace of mind, always set the correct mode manually.

# EXPOSURE WHY ARE MY PHOTOS TOO BRIGHT OR TOO DARK?

*You can tell immediately if there's an exposure problem. Here's how to diagnose why your shots might be under- or over-exposed...*

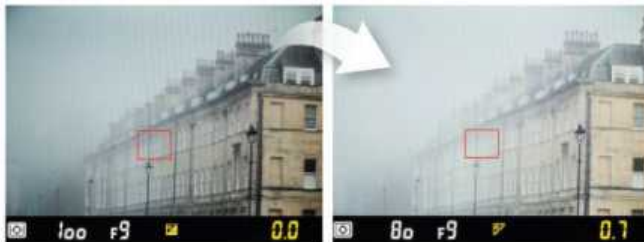
08

## NOT USING EXPOSURE COMPENSATION

Matrix metering does a fine job of producing balanced exposures for the majority of day-to-day photo opportunities. However, faced with an overly bright or dark subject or

scene, the camera can get things wrong. Despite Matrix metering essentially applying its own exposure compensation to deliver what it determines is an optimum exposure, it may not be accurate.

Manually dialling in exposure compensation at the time of shooting is far better than trying to rescue an under- or over-exposed image later. Pushing the brightness of an image that's very dark in Photoshop can lead to noise in shadows, while trying to eke some detail from burned-out highlights can lead to 'digital'-looking results.



A bright, foggy scene may appear too dark if you don't apply positive exposure compensation: the camera wants to make the fog grey rather than white

## IGNORING THE HISTOGRAM

It's easy to get caught up with composition and focusing, and to forget to check the histogram regularly. But getting the exposure right in-camera is far better than trying to fix things later. Don't rely on the image playback alone to judge the exposure, as the brightness of the LCD itself can give a false impression of the brightness of the shot, especially at night, or in bright sunlight. If a histogram is cut off or 'clipped' at either end, this indicates there are areas that are pure black or pure white, and so contain no texture or detail (in other words, areas that are under- or over-exposed).

If you find that the preview of the image displayed alongside the histogram is too small, then try the Highlights display instead. With this enabled, areas that are potentially over-exposed will blink on the display.

09

10

## NOT KEEPING AN EYE ON THE DYNAMIC RANGE

Sometimes the dynamic range of the scene – the difference in brightness between the darkest and lightest points – may be too wide for the camera sensor to cope with in a single exposure (see Tip 28, page 63). The key to identifying this is to check the histogram: if it extends beyond both the left and right-hand ends of the graph, then exposure compensation won't make any difference. This is typically the sort of situation you'd encounter when shooting a backlit portrait, or a landscape at dawn or dusk.

There are a variety of ways you can reduce the dynamic range of the scene so that it fits within the dynamic range of the camera's sensor. These include using flash to brighten up a backlit portrait, or attaching a graduated Neutral Density filter (ND grad) to darken a bright sky in a landscape shot, bringing its exposure level closer to that of the land. With stationary subjects you could also try taking two or more pictures at different exposures and then blending the best bits of each in software.



In this situation, you could either expose for the sky or expose for the buildings (top). One solution is to shoot two images and blend the well-exposed areas of each image in Photoshop later (bottom)





# 11 FORGETTING TO SHIELD THE EYEPIECE

Did you know that light can enter the camera through the viewfinder and affect the exposure of a picture? Most of the time this doesn't present a problem, as your face is glued to the back of the camera and shields the eyepiece, but if you switch to Live View, or fire the shutter using a remote release, then there's a chance that light can leak through the viewfinder. The effect is more obvious in shots taken over a long exposure, when strange, ghostly shapes and streaks can be burnt into the image, as can be seen in our photograph of a tree here.



A strong ND filter such as the Lee Big Stopper enables you to use a long exposure in bright sunlight, but this is what can happen if you don't keep the eyepiece covered...

Nikon recommends using an eyepiece cap to block the viewfinder in these circumstances, but you might not have one of these to hand. It's just as easy to drape a black lens cloth over the top of the camera instead – and you can use it to keep your lens clean, too!

# 12 FUMBLING FLASH SETTINGS

If you're using fill-flash outdoors and find that your pictures are coming out too bright, then it's likely that either you're too close to the subject or the shutter speed required to expose the shot correctly exceeds the flash sync speed (the fastest shutter speed that flash can be used with – typically 1/200 sec). Switching to a smaller aperture is often the easiest way to fix this problem. The aperture controls the flash exposure, with smaller apertures reducing the flash exposure.

On very bright days, this may mean that you end up using a smaller aperture than you'd like, bringing more of a scene into focus. In this situation, fit a standard ND filter to your lens; this will let you use large apertures without over-exposing.



1/200 SEC AT f/2.2, ISO200



1/200 SEC AT f/9, ISO200

# 13 NOT CHECKING THE METERING MODE

The metering mode you set makes a big difference to how bright or dark a picture is. If an image looks way too bright or dark, check that you haven't accidentally set the wrong mode. Spot metering, for example, only meters a small part of the scene, and if you've manually selected an autofocus point then the spot meter will be linked to this spot too.

# COMPOSITION WHY DO MY PICS LOOK LIKE SNAPS?

*Here's why your framing may be letting you down, and some simple ways to improve it...*

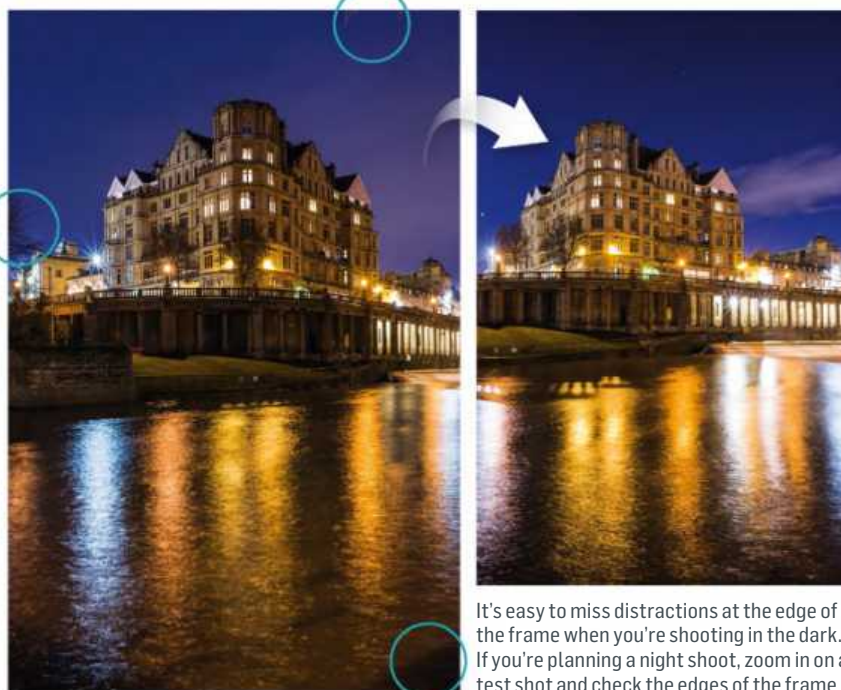
## 14 NOT GETTING THE HORIZON LEVEL

There's really no excuse these days! Nikon's built-in Virtual Horizon option can help you get plumb-straight seas, landscapes and architecture. If your camera lacks this feature, activate the grid display instead – some SLRs enable you to do this in the viewfinder as well as on the Live View screen. If your SLR lacks both of these, use the AF points in the viewfinder to line up the feature you want to appear straight.

You can, of course, correct a sloping horizon in Photoshop, but this can lead to a significant portion of the image being trimmed off when the correction is made. It only takes a few seconds to get it right in-camera, so you may as well save yourself some pain later.



If you find the Virtual Horizon or grid overlay difficult to see on the rear screen, fit a traditional hot-shoe bubble level instead



It's easy to miss distractions at the edge of the frame when you're shooting in the dark. If you're planning a night shoot, zoom in on a test shot and check the edges of the frame

## 15 NOT CHECKING THE EDGES OF THE FRAME

When you're focused on getting a shot and making sure the subject looks its best, it's easy to miss distracting elements at the edges of your frame. You can, of course, spend time in post-production cropping a shot or cloning out unwanted features that were missed when you framed the shot in the viewfinder, but to make the best use of your time and the full potential of the camera's sensor (and get into the habit of taking the photograph you want and not relying on editing), it pays to get it right when you take the picture.

That's easier said than done, especially when you factor in the fact that not all Nikon's viewfinders provide 100% coverage. This explains why you may be surprised to see branches, leaves or street lamps creeping into your carefully composed shots when you play them back on the rear screen (above). So, before you press the shutter release button, run your eye quickly around the edge of the screen to check for possible distractions – zooming the lens out slightly before recomposing your picture can help to pick out those things that may be hidden at the time of shooting. Alternatively, switch to Live View mode, as this always shows the complete picture, with 100% coverage on all cameras.



## NOT FINDING A POINT OF INTEREST

16

Photos can end up looking like snapshots if you don't give them a focal point. If there are too many elements in a picture that aren't working in harmony, the viewer's eyes will wander around the shot looking for something to latch onto. One technique is to use the 'rule of thirds' to position the subject – this is particularly effective when the focal point is small in the frame. Another trick is to frame a shot so that there's an odd number of elements, as this tends to result in a more balanced composition.



The original shot may tick some of the boxes, with its rule of thirds and leading lines, but there's no focal point, and the patch of grass on the right is distracting. The real interest is in the sky, so the shot was reframed to make the most of this

## LEAVING TOO MUCH DEAD SPACE

17

One of the first decisions to make when framing up a shot is whether the subject or scene suits a horizontal or a vertical format. Generally, taller subjects suit the latter format, although including some of the environment in a wider shot may add more interest. You can crop a vertical image out of a landscape-format shot when you edit the original shot, but you'll also reduce the image size. If you've got the time and space on a memory card, it's worth 'bracketing' your composition, in the same way that you would bracket the exposure.



Here, the strong leading lines and symmetrical subject lend themselves to a tighter, vertical crop



## NOT GETTING CLOSE ENOUGH

As photojournalist Robert Capa famously noted: "If your photographs aren't good enough, you're not close enough." With this in mind, it's easy to feel disheartened if you find yourself in a situation where you're lacking in focal length. While it's true that frame-filling shots have impact, they're not always an option. Cropping an image can get you that full-frame impact – albeit at the expense of image size – but why not try composing shots so that your subject is positioned within the environment, rather than isolated from it?

18

## NOT CAPTURING THE DECISIVE MOMENT

19

In any set of images, one will stand out as the best; the one where everything comes together. This 'peak' moment doesn't have to be something as grand as a gymnast at the zenith of an elaborate spin: it could be a subtle shift in someone's expression when you're shooting a portrait, for example, or the position of clouds in a landscape shot.

Naturally, the more frames you fire off in succession, the greater your chances of capturing the peak of the action or the defining moment. That being said, timing is everything; if you see the moment through the viewfinder, then the chances are that you've missed the opportunity to record it! Trying to anticipate this moment is key, and starting to shoot before it happens will increase your chances of capturing it.



WRONG



RIGHT

Even 'stationary' shots can show a peak moment. The second shot stands out because of the position of the clouds – the larger one appears to be streaming from the cathedral's central pinnacle

## ALWAYS SHOOTING FROM HEAD HEIGHT

20

If you find that your compositions lack punch, it may be because you're not exploring all the angles. By making the effort to find a shooting angle that's lower or higher than head height, you can create a more interesting and unusual picture.

# SETTINGS & KIT COMMON CAMERA ERRORS

*Here are eight familiar camera and camera settings problems photographers face (we've all done it!) and what you can do about them*

## 21 NOT RESETTING THE CAMERA

It's a good idea to develop (and use) a default 'grab and go' set-up that the camera can be reset to once you've finished taking a series of pictures.

Doing this ensures that you can change any settings from a familiar set of parameters. For instance, if you forget to reset any exposure compensation you've dialled in, then subsequently dial in some additional compensation, you may end up with horribly over- or under-exposed results. The same can happen if you haven't switched the camera to your preferred shooting mode or metering pattern, or if you've left the ISO really high.

## 22 WRONG COLOURS? WRONG WHITE BALANCE...

If you notice a colour cast on your images when you preview them, the chances are that the wrong white balance has been set. Most photographers leave the white balance in its Auto setting, and with good reason: it generally does a decent job of removing colour casts and providing natural-looking results. It can remove some of the character of the light, though, leaching some of the warmth from a sunset shot, for example, and it can also get things wrong under artificial lighting, too.

Auto white balance can also change the colour temperature from shot to shot without the lighting changing very much at all. This can cause problems if you decide to batch-convert a series of shots from the same location, as each image may have to be tweaked individually. To ensure consistency, and speed up your digital workflow, it's worth switching to one of the manual presets, creating a custom white balance or dialling in the colour temperature manually.



Use Live View to preview the effect that changing the white balance has on an image

## 23 NOT CHECKING CARDS AND BATTERIES

How often have you found yourself out shooting only to discover that you only have room for a couple of pictures on the card in the camera? Having to delete images to free up space while out shooting is no fun, and takes time! Try to get into the habit of downloading the contents of your memory cards, and formatting them, every time you return home from a shoot.

Ensure your battery has enough juice to get you through a shoot, too.

Excessive use of Live View, playback mode and shooting in cold conditions can all reduce the shooting time considerably, and it certainly makes sense to take a back-up battery in these circumstances.



## 24 NOT USING CONTINUOUS DRIVE MODE

While you might expect the single shot drive mode to be a perfectly good choice for general photography, the continuous low or continuous high options can be more effective at giving you sharper, more timely results. With single shot, not only can the action of pressing down and releasing the shutter release produce soft results, but taking your finger fully off the shutter release can cause the camera to refocus the lens – although you can get round this by configuring the camera so that the AF function is removed from the shutter release.





## 25 NOT MAKING THE MOST OF AUTO ISO

Use the Auto ISO menu to fix the highest ISO that the camera can choose



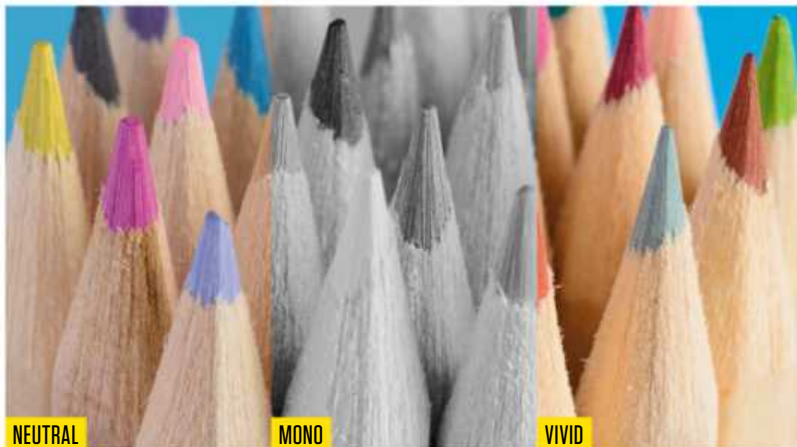
While some photographers turn their noses up at the thought of using Auto ISO, concerned that the camera will opt for a sensitivity that's unnecessarily high for the conditions, it's actually very useful. The Auto ISO function can be tailored so that the camera is unable to push the ISO higher than a sensitivity you've dialled in, and you can also set the minimum shutter speed you need, improving your chances of taking sharp handheld photos.

It also adds flexibility in manual mode, enabling you to set a combination of aperture and shutter speed to give you the look you want, with the camera then adjusting the ISO to keep the exposure consistent as the light changes.

## NOT MAKING THE MOST OF PICTURE CONTROLS

Don't leave the Picture Control setting in its Standard position for every shot. By shooting in RAW, you can preview the effect that a Picture Control has on an image during Live View or playback, but the original image will remain unaffected. This is particularly useful when shooting for black and white: using the Monochrome Picture Control enables you to judge how a picture will work in greyscale, while the RAW file will be saved with all the colour information intact. This allows you to carry out the conversion later.

It's a different matter when you shoot JPEGs, as the Picture Control is 'baked' into the file. If you don't like the look delivered by the Picture Control you've set, you can try to fix things in Photoshop, but image quality will suffer. It's important to get a handle on Picture Control when shooting HD video too, because every frame of a movie is basically a JPEG image, so colour, contrast and sharpness are fixed at the time you record the footage. Filmmakers tend to use the Neutral or Flat Picture Controls, as these give low-contrast results that hold up better to enhancements in video-editing software.



If you shoot in RAW image quality, the image will retain all its colour information, enabling you to visualise how an effect will work – but if you want to change it later, you can still do so

## NOT MAKING THE MOST OF U1 AND U2

Some Nikon SLRs enable you to create your own user-settings modes, which allow you to bring up a specific camera configuration at the touch of a button (or turn of a dial). If you're the kind of



photographer who sticks to aperture-priority mode for 99 per cent of their photography, then you may not have explored this option, but you're missing out on one of the camera's more convenient aspects. One particularly handy way it can make a difference is in enabling you to set up a dedicated 'movie' mode, which allows you to optimise the autofocus and other key settings without having to delve into the menu and make adjustments each time you want to shoot a video clip.

## OVERUSING ACTIVE D-LIGHTING

Nikon's Active D-Lighting can be a great option for automatically adjusting brightness and contrast – it's useful in situations where you'd struggle to reveal detail in both the highlights and the shadows of an image, particularly where you can't use an ND grad or can't face additional editing work later. However, it can make low-contrast scenes look flat, and it can also cause problems if you're applying exposure compensation – a shot may still appear too bright, even though you might have dialled in some negative exposure compensation. As a result, it may be worth de-activating Active D-Lighting in these situations.



Active D-Lighting is useful, but reserve the highest setting for high-contrast lighting, and de-activate it for low-contrast subjects. You can always apply it later when you process shots

## NOT USING THE 'CORRECT' FOCAL LENGTH

# 29

While they're capable of delivering dramatic results, wide-angle lenses need to be used with care as they can also deliver peculiar results – when used close up to shoot a portrait, for example, they can end up distorting a person's features. They can also make backgrounds seem small and insignificant in landscapes. While sometimes you might want to play with a portrait and have fun with the effect, as a rule it's not what most people having their photos taken appreciate. For both portraits and landscapes, switching to a lens with a slightly longer focal length and shooting from farther away may be more desirable.

## OTHER ISSUES

LIGHTING,  
PROCESSING  
AND MORE...

*How you light your images, and how you edit them, are also key to professional-looking shots*

30

**NOT WAITING FOR THE RIGHT LIGHT**

Waiting for the best light – in terms of its quality, quantity and direction – is one thing we all know we should be doing, but when we have to squeeze in some quality time with our cameras where we can, well, sometimes we have to make the best of it.

Even then, subtle changes in lighting can make a big difference to a photo, so it's worth spending a few extra minutes at a location to make sure that you're not likely to miss out once you move on. Failing that, try to improve the lighting by, say, using a diffuser to produce soft illumination for close-ups, or using a reflector or a snap of fill-flash to create more balanced lighting in a portrait.



Sometimes all it takes is for a cloud to move and suddenly we're presented with a much more appealing and well-lit scene

31

**USING FLASH TOO FAR AWAY**

Using a large aperture and increasing the ISO to amplify the signal from the sensor can make the light from a flash reach farther, but the light is unlikely to be the most flattering. At the limits of its working distance, a flash essentially becomes a pinpoint light source, resulting in harsh shadows and red-eye. Either get closer, or switch it off.

**GETTING SLOPPY WITH FILTERS**

We all know how important it is to keep filters spotless, but even highest-quality, highly-buffed filters will give duff results if they're not used properly. If you're using a screw-on filter, then it's important to fit a lens hood when you're shooting in bright conditions, otherwise there's a risk of internal reflections degrading the image.

It's tougher to do this with a square filter system such as those from Lee and Cokin, as you'll need a specialist lens hood. Using your hand or your body to cast a shadow over the front of the lens is a good idea, but even then you can end up with ghosting – light reflecting from the surfaces of the filters and lenses – if the filter isn't properly installed. Always start with the slot nearest the lens; it's easy to miss this if you're shooting in low light or inclement weather.



In this first example, a 10-stop ND filter wasn't placed in the slot of the filter holder that was closest to the lens. This led to ghosting, with the light being reflected off the surface of the filter and lens. Note that the ghosting is the same shape as the aperture being used

**INCORRECTLY POSITIONING ND GRADS**

While ND grads are useful for seascapes, landscapes and other situations where there's a clear boundary between the sky and the foreground, they're less useful when a feature in the landscape protrudes into the sky. As the filter is lowered to darken the sky, there's a risk that the feature will become darker too, so drawing attention to the use of the grad.

Using your camera's depth of field preview can help you position the filter accurately, as the aperture will be 'stopped down', making the transition between the dark and clear parts of the filter more obvious.

However, when you're dealing with scenes that include buildings, lighthouses and cliffs, either use an ND grad with a soft transition, or do without the filter and bracket the exposure, so you can blend the pictures later in Photoshop.





## 34 NOT PROCESSING AN IMAGE

It's rare that a JPEG image straight out of the camera requires no subsequent work. To get an image looking its best, you may need to tweak the levels, fix a colour cast, add some additional sharpening or crop it for a better composition. If you shoot RAW files then you have to process the images yourself, which adds time to your workflow, but at least you'll be starting with the highest-quality file that your camera can produce, and any changes that you make are never permanently applied to the original image.



Images can appear flat straight out of the camera, even when you're shooting in JPEG format. Most images require some processing, even if it's just to sharpen them and add contrast.

## 35 FORGETTING TO FIX LENS PROBLEMS

Lens distortion can create a myriad of problems, so make this the first adjustment you apply when you process an image. If you don't fix distortion, then images may not appear as sharp; lines that should appear straight, such as the horizon, will appear to bow; and the corners of an image may be darker than its centre.

You can apply some lens corrections in-camera, such as using Vignette Control to reduce the amount of corner-shading a lens exhibits (typically a problem with fast lenses), but carrying out the adjustments post-shoot gives you more control.

If you do plan to apply lens corrections, then compose wider than normal, particularly with a wide-angle lens, as the stretching and cropping that occurs can slice a surprising amount from the edge of the picture.



Chromatic aberration (colour fringing) can be obvious along edges in high-contrast shots, but it's easy to remove automatically in Lightroom and Photoshop, which have lens profiles already built in.

## 36 NOT VIEWING IMAGES AT 100%

Whenever you edit images, zoom in and check the image at 100% when carrying out edits that require a certain level of precision, such as sharpening, noise reduction and cloning out sensor spots. In some cases, the changes will only be visible

when you're viewing the image at this level of magnification. It's also worth doing this after you've carried out changes to colour saturation or contrast, in order to check that details are still visible and colour gradation is still smooth.



Always view an image at full size when applying noise reduction, otherwise you won't be able to judge its effectiveness.

## 37 GETTING HEAVY-HANDED WITH IMAGE MANIPULATION

Although most images benefit from some post-production work, subtlety is often the key. Trying to fix very over- or under-exposed pictures can look obvious, while boosting saturation and sharpness too high will give pictures a 'digital' look. After all, the best photography is about capturing the world as you see it, not as you imagine it to be... ■

# T A K E I

**MANIPULATING TIME ISN'T JUST THE PROVINCE OF DOCTOR WHO – TOM MACKIE SHOWS HOW YOU, TOO, CAN BE A TIME LORD WITH HIS TIPS ON LONG EXPOSURES. TARDIS NOT REQUIRED**

**P**laying with time might seem the stuff of science fiction, but for landscape photographers it's a fantastic way of capturing a different take on the way our eyes see a scene. By controlling time you influence emotions. It's quite easy to freeze time, but it's more of a challenge to manipulate time by slowing it down. Using slower shutter speeds

can transform a scene to express action, drama, wonder or solitude.

How do we decide what shutter speed to use for a specific desired effect? Here, we'll take a look at four different time segments and see how we can use each to create a different effect and feeling. We will be working with shutter speeds starting from 1/30 sec working up to four minutes.

Each one of these time segments, when used correctly, can produce completely different results. The relatively short exposures show energy and motion, then as we slow time down the results become much more calm and tranquil.

All it takes is a tripod, a cable release, an ND filter or two, and my essential guide to the effects you can get when you play with longer exposures.

## HOW LONG HAVE YOU GOT?



**01 1/30 SEC – 1/2 SEC**



**02 1 SEC – 5 SECS**



**03 15 SECS – 30 SECS**



**04 1 MIN – 4 MINS**



# T S L O W





## TIME ZONE 01: 1/30 SEC-1/2 SEC

CAPTURE SOME BLUR AND ADD A SENSE OF ENERGY TO YOUR LANDSCAPES



## CATCH A WAVE



### WHAT'S THE EFFECT?

When you think about all of the pictures that are made in the world, most of them will have been taken using a shutter speed of 1/60 sec or faster. This is mostly because the photographers required a fast enough shutter speed to enable them to hold the camera rather than use a tripod.

Shutter speed, by definition, is the amount of time that the shutter is open and allowing the sensor or film to record the image. But when

we slow the shutter speed down and leave the shutter open longer, a whole new world appears. With just a few clicks of the dial, we cross over from static snaps into the realm of exciting and evocative imagery.

Seascapes open numerous possibilities for using slower shutter speeds, which allow you to create the feeling of explosive power in crashing waves. Timing plays an important part in creating a successful image, as you need to capture the exact moment a wave

explodes against a rock – or, in this case, an iceberg. It can take several attempts to get the right wave.

### WHAT'S THE TIME?

I find that a shutter speed of around 1/8 sec to 1/4 sec works very well in producing the desired effect of an explosive crashing wave, and for this image I used 1/4 sec. It's slow enough to capture movement in the water, yet fast enough to freeze the wave to show the impact. When you are using slower shutter speeds, use a tripod to keep everything in the scene, except for the wave, sharp.

Have you ever heard of the 'seventh wave' theory? It states

that every seventh wave will be the biggest one. This would be so easy if it were true – it isn't, although there is some truth behind it. If you study a series of waves, there is a pattern that emerges with the big one arriving sooner or later. It is never random, so take some time and study the waves to give you more insight into capturing the right wave.

Backlighting will also help to make the wave stand out. In this image, I aligned the rising sun with the hole in the ice and used a small aperture of f/22 to create the sunburst. A three-stop ND grad over the sky balanced the exposure with the foreground.

## PRO TIP

When the full moon is setting in the west, a shutter speed of around 1/30 sec is fast enough to capture the moon without it blurring due to the rotation of the Earth, and also to correctly expose the scene. Make sure that you lock the mirror up when using a telephoto, especially at this shutter speed, as the mirror could cause vibration that will ruin the sharpness of the image



## SLR TECHNIQUES

## GO WITH THE FLOW

**WHAT'S THE EFFECT?**

When you want to capture the drama of a cloud formation by freezing the clouds, yet have enough movement in the foreground to ensure, say, a river appears to be flowing rather than completely frozen, you have to carefully consider your shutter speed. If you use too long an exposure, the clouds will start to blur and this can be unsettling to anyone looking at your picture. Clouds look good with either a short enough exposure to freeze them or a really long exposure to get lots of movement (see page 75); anything in between can begin to look odd. Too long an exposure would also run the risk of losing texture in the water and burning out highlights.

**WHAT'S THE TIME?**

The optimal shutter speed of 1/5 sec was the perfect compromise here, enabling me to achieve a flowing river with texture in the water and yet freeze the clouds and show their massive, billowing shape. I wanted to capture the swiftly moving clouds over the Cuillins on the Isle of Skye before they drifted out of the scene. Even so, timing was as important as it is when capturing waves. I waited until they were over the mountains to give the impression of an erupting volcano. I used the diagonal line of the flowing river to reinforce the angular composition. As there was only a little water flowing in the river, a shutter speed of 1/5 sec was slow enough to get some motion without losing highlight detail.

**GEAR UP WELLIES**

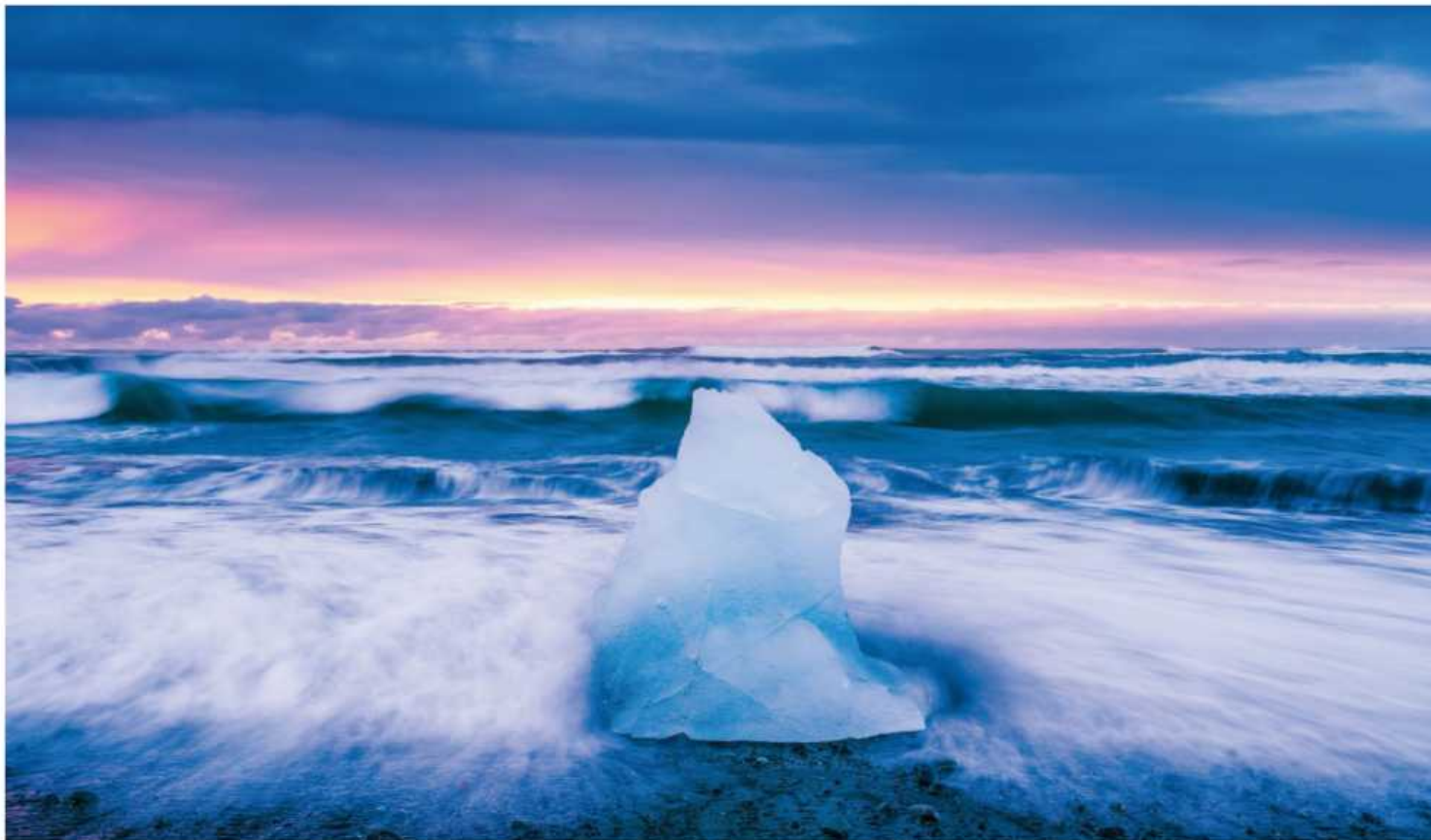
When shooting along rivers and coastlines, wear a pair of high rubber boots or even waders. They will allow you to keep shooting when the waves rush in around you, and they will also let you walk into shallow rivers to find a better composition.





## TIME ZONE 02: 1 SEC-5 SECS

TURN MOVEMENT INTO SOMETHING SILKY FOR A MORE PAINTERLY EFFECT



## SMOOTH AS SILK



### WHAT'S THE EFFECT?

In the last time segment, we were concentrating on creating a sense of action in a seascape, but as we slow time down, the feeling becomes more artistic, like brush strokes on a canvas. Rushing waves still retain their texture, but have a softness about them reminiscent of paintings by the artist Claude Monet.

Before we look at how we create this effect, there are a few factors to consider. The amount of water and direction in which it's flowing are especially important. It's best if the wave is at the end of its approach so there is less surface water and more highlights showing, which will record as textured waves. The effect

is completely different if the wave is approaching or receding so it's down to personal choice. Personally, I feel if there is a large piece of rock in the foreground, then it looks better with waves rushing in around the subject.

### WHAT'S THE TIME?

Small variances in time with this technique will produce a completely different effect, so experiment to see what you prefer. I have found the best shutter speed is around 1 sec. If you use an exposure of 1/2 sec, the water retains more texture, but lacks fluidity and silkiness. A second is long enough for the highlights in the waves to smooth out and reveal the rocks under the approaching water, as in this image.

## GEAR UP CABLE RELEASE

A cable release is essential when carrying out long-exposure techniques. You could use your camera's self-timer on a short delay for exposures of up to 30 seconds, but if you want an exposure any longer than that, you're stuffed without a cable release. It's better not to rely on the self-timer, especially when timing is crucial – for example if you want the shutter to trip precisely when a wave is breaking. When it comes to buying a cable release, I recommend you keep it simple. Camera shops will want to sell you the most expensive, 'all the bells and whistles' cable release, but these rely on batteries and tend to be bulky, taking up more room in your camera bag. Stick with the basic Nikon MC-12B Remote Release Cord and save yourself £100/\$130. The money you save can be put towards a polarising filter (below).

## PRO TIP

Use a polarising filter to remove reflections from the surface of the water and increase the colour saturation. It will also increase the exposure time, enabling you to obtain the silky water effect more easily (depending on lighting conditions)



## WISPY FALLS



### WHAT'S THE EFFECT?

Producing the 'silky water' effect in a waterfall

shot can be easy to achieve, but it depends on a number of factors: the volume of water, the camera angle, and the type of waterfall all have a bearing on the shutter speed used.

There has long been a debate on whether it's better to use a long or short exposure to photograph waterfalls. A short exposure will render the water looking frozen, giving the impression of tremendous power, while a longer exposure of at least 1 sec will turn it silky smooth for a dreamy look. Some people may dislike this 'milky' texture, but it does come down to personal preference.

If there is a lot of water spilling over the falls, use a slightly shorter exposure, otherwise it could become just a featureless white veil. This is especially true if your camera angle is straight on to the falls. Consider also the type of waterfall you're shooting. I prefer ones with lots of ledges for the water to cascade over.

### WHAT'S THE TIME?

There isn't one exposure time that works for all waterfalls, as a number



of factors have to be considered. However, you will definitely need a tripod for this technique.

Many waterfalls are situated in the depths of forests. This is good, as dark conditions naturally require a longer shutter speed, and direct sunlight can result in very high-contrast images. Overcast conditions are the best for shooting forest waterfalls.

I always use a polarising filter to cut the reflections from the foliage and the highlights on the water,

but this also cuts one to two stops of light going through the lens, so requires a longer shutter speed.

The aperture you use will have a bearing on the shutter speed. You could shoot at a small aperture such as f/16 or f/22 to achieve a long enough exposure, and this is great if you also need more depth of field because you are including something in the foreground, but it is not ideal for getting the sharpest possible images. I try to use my optimal aperture of f/8 with my Nikon 24-

70mm lens whenever possible. In order to shoot at f/8 and still get a long enough exposure, I use the Lee Little Stopper Neutral Density filter. This blocks out six stops of light, permitting long exposures even in bright daylight conditions.

I shot this image of Iguazu Falls at f/8 and a shutter speed of 3 secs using a polarising filter plus the Lee Little Stopper. Compare it with the inset image of the falls, shot at 1/160 sec; as you can see, the inset image doesn't have the same appeal.

## CLEAN REFLECTIONS



### WHAT'S THE EFFECT?

If there is a slight breeze ruining a reflection when shooting rivers or lakes, there is a solution: use a long exposure to smooth out the water and improve the reflection. If you are shooting at sunrise or sunset, the exposure times may naturally run to several seconds, but if you are shooting during the day, you will need a neutral density filter.

### WHAT'S THE TIME?

This image of Thurne Mill reflected in the river needed an exposure of five seconds to smooth the surface of the water, as a light

breeze detracted from the overall tranquility of the scene. Would it have made the reflection better if I'd used a longer exposure time? Not really, as the water's as smooth as it can be, and there wasn't any other benefit of using a longer exposure, because there weren't any substantial clouds.

When there is the possibility of getting some interesting movement in clouds, I use my Lee Little or Big Stopper with a landscape polariser to obtain a longer exposure (see page 75). My Lee landscape polariser is ultra-thin, so is great for using with wide-angle lenses without running the risk of vignetting.





# TIME ZONE 03: 15 SECS-30 SECS

IN THIS SLOWER SPEED BRACKET, THE SKY REALLY IS THE LIMIT



## CURTAINS OF LIGHT



### WHAT'S THE EFFECT?

This time segment is probably my favourite as the images created at these shutter speeds are the stuff that *Doctor Who* is made of. Capturing the psychedelic skies of an aurora borealis is something that every photographer should experience.

I'm lucky to experience this spectacle every year when I lead workshops in the Lofoten Islands in Norway. It's never a sure thing as it relies on the amount of solar activity and clear skies. Checking the aurora forecast tells me if there is a chance of a decent show. The Kp-index is a global geomagnetic storm index with a scale of 0 to 9. The higher the number, the better the aurora.

You don't have to travel to the Arctic to see an aurora, though, as they are becoming frequent as far south as northern Europe.

### WHAT'S THE TIME?

There is a particular procedure for capturing auroras. The normal exposure times are around 15 secs to 30 secs. The shapes of the auroras change quickly, so they would blend together and the stars would start to elongate during longer exposures.

There is also a formula for figuring out how long an exposure you can make before the stars start to trail due to the Earth's rotation. It's called the 500 rule, and basically you divide 500 by the focal length of your lens. For example, if you're using a focal

length of 24mm on a full-frame camera, divide 500 by 24 and you'll get 21, meaning that going no longer than 21 secs will ensure the stars will be sharp points of light.

Use a wide-angle lens with the aperture set to its widest aperture. Focus manually and set it to infinity. The hash mark should be set to the middle of the infinity mark on the lens. I always make an exposure then check the focus at 100 per cent on the LCD. The ISO setting can be anything from ISO400 to ISO4000 or more, depending on the amount

of moonlight. I've used ISO400 with a full moon where it lights the landscape. No moon will allow the aurora to show up better, but I like to have some detail in the landscape.

The usual go-to ISOs are ISO1600 to ISO3200. These give a short enough exposure time to capture the aurora.

When deciding where to photograph your aurora, look for a landscape feature that will complement them. I shot this image from a beach; the wet sand captured the reflections of the mountain and aurora perfectly.

## PRO TIP

When shooting at high ISOs, use the noise-reduction feature on your Nikon, in addition to reducing the noise in Lightroom using the Luminance noise reduction, or using Nik's Dfine 2 noise-reduction software, which also does an excellent job





## STARRY NIGHT



### WHAT'S THE EFFECT?

In the past few years, high-ISO technology has moved on in leaps and bounds, and now you get minimal noise using ISOs that I could once never have imagined using. I often use my D810 at ISO3200 with good results, and the new D4s is probably the best on the market, going well beyond ISO3200 with incredible results. When once I would have packed up after sunset, now I'm planning where I can shoot the night sky.

### WHAT'S THE TIME?

The first thing to do to create your star-filled sky is to get as far away from city light pollution as possible. It's best to shoot during a new moon phase when there's no moon to light the sky. This is when the stars and the Milky Way will appear the brightest. When it comes to deciding where to shoot, I try to include something interesting in the foreground rather than shoot the sky alone. If you're planning to include

the Milky Way, there are all sorts of star apps and websites, such as [www.stellarium.org](http://www.stellarium.org), that will help you find exactly when and where it will appear in the sky.

I was doing a workshop in the Dolomites when I made this image of St Johann's church with the Milky Way above. I used my widest lens, a Nikon 14-24mm, set at 14mm to take in as much sky as possible. To calculate the exposure, I used the 500 rule I mentioned earlier (see *Curtains of Light*, left). Using an ISO of 3200, I exposed for 20 seconds at f/2.8. During the first 10 seconds, I lit the church with a torch, moving the light over the church to illuminate it. This is commonly referred to as 'painting with light'.

When you're doing night photography, you will often find yourself standing around in freezing temperatures. Wear several layers of clothes, even on your hands. I wear a thin pair of gloves inside a thicker pair so I can still adjust my camera settings with the thin pair.

## BOLT FROM THE BLUE



### WHAT'S THE EFFECT?

Capturing lightning bolts with your camera can be very rewarding and impressive, but also very dangerous. The last thing you want to do is stand in an open field with your camera mounted on a tripod – the tallest object for lightning to strike. It's best to be safe inside somewhere like a car or a building. The minute you hear thunder, count every second until you see the lightning. Each second equals about a mile, so if the time between strikes reduces, the storm is approaching. This is better, as the chances are it will still be dry before the storm hits where you are.

If you are shooting from a car, you can use a window-mounted support or a remote trigger and have your camera set up a short distance away from you. There are also many phone apps that let you control the camera for remote shooting. Even

though Nikon cameras are well sealed, it's advisable to cover your gear to keep the rain off your lens.

### WHAT'S THE TIME?

There are three methods for capturing lightning bolts. The first is to use a 30-second exposure, which is how I shot this image of lightning over Iguazu Falls in Argentina. This is the 'open the shutter, wait and see method'. If you are lucky the lightning will strike during that period. But Murphy's Law often takes over here – the best lightning strikes occurred when I was reviewing the images on the display! The second method is the 'lightning-fast trigger finger'. Open the shutter the second you see the lightning, as the chances are that secondary strikes will soon follow. The third method is more of a sure thing: the 'hotshoe lightning trigger'. This uses a little device that attaches to your Nikon's hotshoe



and fires the shutter whenever the lightning strikes.

Choose a scene that looks good without lightning so it will look even better with the strikes. Make your initial exposure starting with f/8 for 30 seconds at ISO100. After the first strike, check your shot and make any exposure adjustments accordingly. I ended up reducing the ISO to 64 and used an aperture of f/11 to enable a 30-second exposure for this image.

## GEAR UP HEADLAMP

A headlamp – a small torch that straps to your forehead – will free your hands to work with the camera. One with a red light will save your night vision and keep you from blinding other photographers you might be shooting with too.



# TIME ZONE 04: 1 MIN-4 MINS

GO LONG FOR MILKY WATER, WISPY CLOUDS AND POLISHED REFLECTIONS



## ON THE ROCKS



### WHAT'S THE EFFECT?

Photographing milky-water seascapes is relatively easy, and there are numerous images like this throughout photographic magazines, but taking one is not simply a matter of pointing your camera out to sea and slapping on a filter. You need to consider things carefully before making any exposures. Look for an interesting foreground of rocks, perhaps concentrating on one distinctive rock, like the one here seemingly wedged between the others. It's best when the tide is at the right level around the rocks, and receding, so you won't be chased by the incoming waves. Finally, have a central point of interest for the eye to stop on, such as the mountain range in the background. Oh, and the right amount of clouds wouldn't go amiss either.

### WHAT'S THE TIME?

Select an exposure time that will allow the waves to make a few passes over the rocks, preferably over the tops so they wet the surface; wet rocks look much better than dry ones as they glisten and reflect the colour of the sky. To obtain an exposure of almost one and a half minutes, I used a Lee Big Stopper ND filter, along with a Lee landscape polariser to remove reflections from the rocks. A three-stop ND grad filter over the sky helped to balance the sky with the foreground. There was an opening in the clouds, so I waited until it lit up the distant mountain. I chose an aperture of  $f/16$  to increase the depth of field, resulting in an image that's sharp from the foreground to the background.





## ADDED DRAMA



### WHAT'S THE EFFECT?

Photographing landscapes over several minutes can transform an ordinary scene into one that conveys everything from action through streaking clouds, to peace via glass-like water. Coastlines provide a wealth of subject matter, and here in Britain we are no more than 50 miles from any coast.

At times, you can set yourself a challenge like I did here, with a panoramic stitch of Nubble Head Lighthouse in Maine, USA. I wanted to create a long exposure at dawn with the sun just breaking over the island. I had to calculate the

total amount of time of all of the exposures to coincide with the sun breaking over the edge of the island. I could have cropped a single file into a panorama, but this would have meant throwing valuable pixels away and I wanted a large file.

### WHAT'S THE TIME?

To determine the position of the rising sun, I used my Flight Logistics sunrise/sunset calculator. This is a compass and chart that tells you where the sun will rise and set at any location. The ocean wasn't very photogenic so I decided to use an exposure of 2 mins for each of the

four exposures to turn the choppy waves into a smooth surface. I had no idea how the clouds would react over such a long exposure, and this is part of the excitement of using a long exposure. The Lee Big Stopper 10-stop ND filter made it possible to obtain a long enough exposure at f/8. I allowed enough time for the sun to rise above the horizon and break the edge of the island, and calculated back to the time when the first exposure should begin.

After stitching all of my images together, I was pleasantly surprised how the clouds were moving towards the island and drew the eye to the lighthouse. I composed it so the coastline led in from the corner, sweeping around to the island. I love it when a plan comes together!

## GEAR UP TRIPOD

It's crucial that you have a rock-steady tripod during long exposures – a lightweight travel tripod might be too flimsy for this sort of job. I use the heavy-duty Series 3 Gitzo 3542XLS carbon fibre tripod. The legs will extend to two metres so I can manoeuvre it into the most difficult positions and achieve higher viewpoints than is possible most tripods. In windy conditions, I can hang my backpack from the tripod to give more stability – that's worth looking for in a tripod. All this and it weighs only 3.1 kilograms.

## PASSING CLOUD



### WHAT'S THE EFFECT?

When you have clouds moving in the right direction, why not use them creatively, as in this image of Reine, Norway? In this picture, the clouds appear to be emanating from the mountain peak.

The reflection of the mountain in the water was very good – that was, until the fishing boats decided to cut right through the middle of it. This isn't a problem during a really long exposure, though, as the boats don't get recorded and the water has time to smooth out, creating a perfect reflection. Even if you are photographing a busy street scene

with people walking through your image, they will disappear during an exposure lasting several minutes.

### WHAT'S THE TIME?

Once again, I used my Lee Big Stopper here, along with my Lee landscape polarising filter to achieve the long exposure. I had to stop the lens down to f/22 in order to get an exposure of 4 mins. The polariser darkened the blue sky, giving separation to the clouds. I used a soft-edge two-stop ND grad over the sky, bringing it down into the mountain. The soft-edge ND grad is ideal with uneven horizons such as massive pointy mountains. ■



## PRO TIP

When shooting long exposures with ND filters during bright conditions, close the viewfinder so no light spills in. If it does, it will ruin the exposure by giving it a magenta cast





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# NIKON SKILLS

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## THE MISSION

To use a dedicated underwater housing to take photos near – and even in – the sea!

## TIME NEEDED

■ One hour

## SKILL LEVEL

- Anyone can do it
- Some tricky aspects
- Advanced technique

## KIT NEEDED

- D-SLR
- Soft underwater housing

## PROJECT ONE

# Go for a dip

Keep your costly camera and delicate lens safe when beside the seaside with a simple but effective – and inexpensive – underwater housing



■ **Water and cameras don't usually mix.** However, there are a wealth of options available to help you take pictures underwater without wrecking your Nikon.

At the top end, you can get hard cases that are built to fit your specific Nikon D-SLR. These can cost upwards of a thousand pounds/dollars, so for most of us a more realistic choice is to use a soft case like the Aquapac (£80/\$105) or Dicapac (£55/\$60) options we tried here. These have a cylindrical space for your lens, fronted by a hard, clear plate. Your D-SLR sits

in the bag, and you can press buttons and access controls through the soft material. It's surprising how much you can do through the bag; you can twist the lens barrel, focus, review shots and more. While not exactly easy, controlling the camera is not as tricky as you might expect.

These bags are pretty tough. In fact, Aquapac claims that a camera lost over the side of a boat at sea was found a week later, still in working order. But when it comes to your camera gear you don't want to take any chances, so test it beforehand.

We took our underwater cases to the beach – a notoriously hazardous place for D-SLRs and lenses! It's not just the destructive effects of water from which they provide protection. There's also all that dastardly sand that is forever trying to get into your lens and mess up the mechanisms.

With these bags you can get close to the action without worrying at all about your camera. There's something thrilling about taking your D-SLR into the water. You can get shots from angles you might never have even attempted before, and if you drop the camera, the air in the bag will keep it afloat. However, it can be a challenge to compose and focus while the waves are knocking you around, so here are a few pointers to get you started... ■

“With these bags you can get close to the action without worrying at all about your camera... You can get shots from angles you might never have even attempted before”



## STEP BY STEP | Just add water

Keep your camera bone-dry the next time you're shooting at the seaside



### 01 Safety ashored

Before you submerge your expensive D-SLR, it's worth checking that the seams are water-tight and the locking mechanism is secure. An easy way to do this is to put some tissue inside the case, then lower it into the water. If the tissue stays dry, then you know your camera will too.



### 03 Bag a winner

Pick a case that fits your D-SLR. The Aquapac case here is perfect for a smaller body like the D5200 with kit lens, while the Dicapac case shown in step 5 is slightly larger – ideal for a D800 and larger lens. Keep a bit of tissue in the bag too, as it'll be a good indicator if any water somehow gets in.



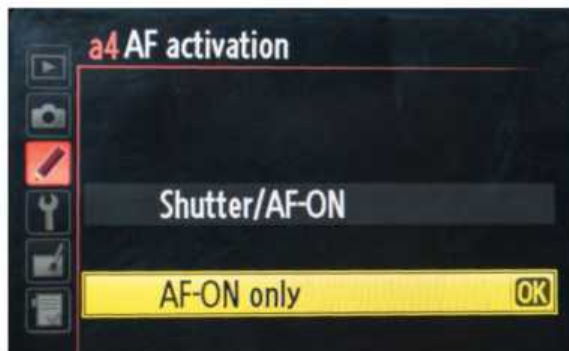
### 05 Line 'em up

It's unlikely that the clear plate at the front will match up with your lens, so you'll need to hold it to prevent the case creeping into the corners of the frame. There's also a danger of fogging due to moisture in the air in the bag cooling down. Add a sachet of silica gel to stop this.



### 02 Prepare your camera

Once your camera's in the bag you don't want to have to take it out until necessary, so make sure the battery is full, the memory card empty and the lens cap off. Use whatever exposure settings you're comfortable with; we used aperture-priority mode set to f/5.6 and ISO200.



### 04 Stay focused

One of the biggest challenges when shooting in the water is to get sharp shots. For this you need to be able to focus precisely. Set the AF to continuous so it engages constantly. It can be tricky to half-press to focus, so try setting back-button focusing on your Nikon.



### 06 Get wet!

Experiment with angles and take advantage of the fact you can go anywhere you like! You can go underwater if it's clear enough, or shoot along the surface for a view of the waves. It's worth trying a few shots in the shallow surf, as you might get interesting reflections on the sand.



## BOOST CONTRAST AND COLOUR

When you get your underwater pictures back to your computer you might find some of them look a little flat. This could be due to the front of the housing getting a little fogged up with moisture, or covered in drops of water. You can often rescue a seemingly ruined shot by boosting contrast and setting the white and black points in your image properly. Use Camera Raw or Lightroom for this. You might find the images look a little soft too, in which case they'll benefit from some heavier-than-usual sharpening.

**QUICK TIP** When at the beach, try shooting from the sea back towards the land, as this is the kind of angle you don't see as often (see main shot)

## THE MISSION

■ To shoot and then create a photo triptych in Photoshop

## TIME NEEDED

■ 30 minutes

## SKILL LEVEL

- Anyone can do it
- Some tricky aspects
- Advanced technique

## KIT NEEDED

- D-SLR
- Photoshop Elements, CS or CC

## PROJECT TWO

# Tell a story in photos



We reveal the easy way to shoot and design triptychs for stunning wall displays

■ Whether you want to create an eye-catching wall display or a web page, a triptych is a great way to present a selection of images. It enables you to go beyond the limits of a single frame and expand upon a theme, so you could tell a story with a beginning, middle and end, or present a subject from several angles, or show different aspects of a person's character.

You may already have three images on your hard drive that would work together as a triptych (in which case, you can just turn to the Photoshop walkthrough over the page), but if you plan to shoot fresh images specifically for this project, there are a few things you need to think about. First,

consistency in background and lighting will help to create harmony between your images, particularly in the case of portraits. For our triptych we set up a makeshift home studio using a dark blanket for a backdrop, with a Speedlight attached to a shoot-through umbrella, triggered using the camera's pop-up flash.

Also, whatever you plan to shoot, aim to capture a variety of poses or angles to give you lots of options for your triptych – try out different crops, and shoot more images than you think you'll need. We'll offer a few pointers on the shoot below, and then show you how to piece your images together with maximum control using clipping masks in Photoshop. ■



## KEY SKILL | Portrait tips

How to frame, pose and light your shots



### Be consistent

The three images need to look like they belong together. Here a black backdrop and consistent lighting with flash help to keep things looking uniform – other options include a consistent colour theme or an unchanging composition.

### Stay loose

If you know you'll be using a shot in a triptych, you'll give yourself more options if you frame it fairly loosely to leave room around the edges. This will give you more freedom to crop or rotate the image when positioning it later.

### Find a balance

Think about balance and symmetry. If your subject is looking one way, for example, grab another shot when they're looking the opposite way so the two frames will balance one another out when positioned side by side.



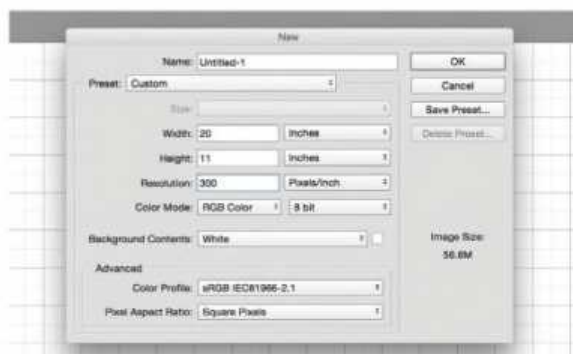


## TELL A STORY

■ A triptych was a common form of religious artwork, and was often used in an altarpiece, showing three sections of the same story or a larger image separated into three. Since then the triptych has been used in a wide variety of other art forms, and it's particularly suited to displaying photos. Narrative often plays a part when three images are presented together, as our natural instinct is to look for the story. As the saying goes, a good story should have a beginning, middle and end – a mantra that works nicely with three images.

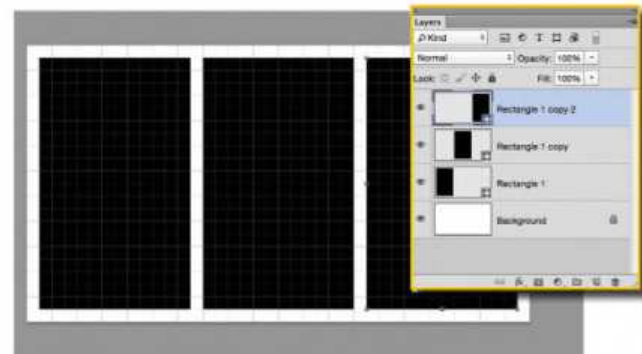
## STEP BY STEP | Three is the magic number

Build your triptych in Photoshop, and learn essential design skills



### 01 Create a new document

Go to File>New. Choose a width and height – here we've gone for Width 20 inches, Height 11 inches, Background White. Set resolution to 300 pixels/inch. Click OK. Make sure the grid is in inches (Photoshop>Preferences>Guides, Grids and Slices), then go to View>Show>Grid.



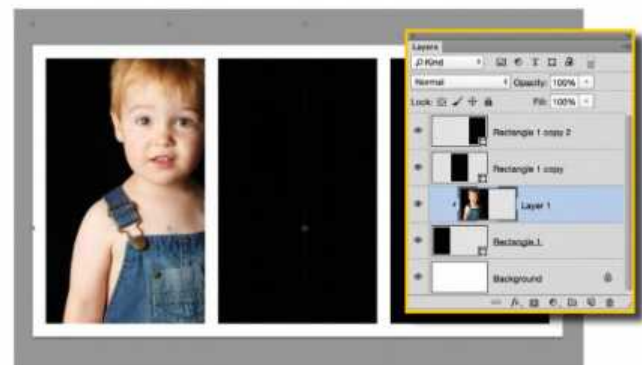
### 02 Draw your frames

Click and hold on the Shape tool in the Tools panel and choose the Rectangle tool. Drag out a box for your first image frame, using the grid as a guide and making sure there's room for three frames of the same size. Take the Move tool, hold Alt and drag the box to create two copies.



### 03 Add the first image

Open your three images in Photoshop. Select the Move tool, and check Auto-Select Layer and Show Transform Controls. Drag an image up to the tab of your new file then down to copy it in. In the Layers panel, move the image layer just above the box layer you want it to fill.



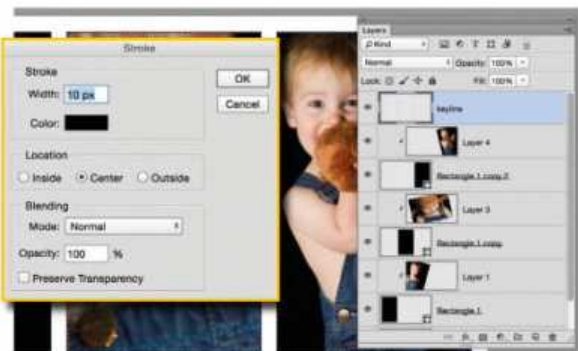
### 04 Create a clipping mask

Hold down Alt and click the line in the Layers panel that separates the image layer from the box layer below. This clips the image, so only the area within the outline of the box is visible – you can crop the image in different ways within the box, and tweak its position, at any stage.



### 05 Resize and reposition

Highlight the image layer and click the bounding box to transform it – hold down Shift and drag the corners to resize, or drag outside the box to rotate. When you're happy with the positioning, hit Enter to apply. Repeat steps 3-5 to add and position the other two images.



### 06 Add a key line

You can add a key line to the edges of each frame if you like. Make a new layer at the top of the stack, then hold down Cmd/Ctrl+Shift and click the box layer thumbnails to load their outlines as selections. Go to Edit>Stroke. Set a width such as 10px, set Colour to black and hit OK.

*QUICK TIP! If you want to transform a layer but its bounding box isn't visible, you can quickly launch Free Transform with Cmd/Ctrl+T.*

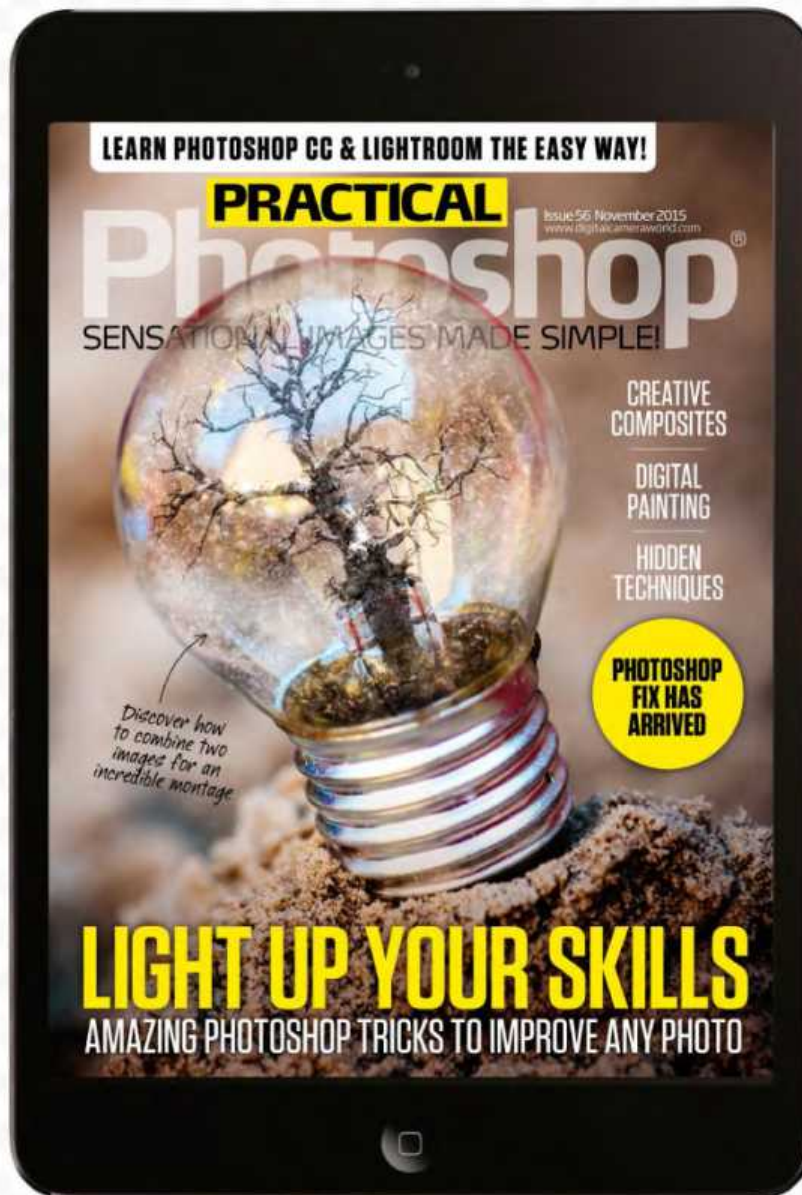


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## THE MISSION

To make your outdoor portraits look more punchy and dramatic

### TIME NEEDED

■ One hour

### SKILL LEVEL

- Anyone can do it
- Some tricky aspects
- Advanced technique

### KIT NEEDED

- Nikon D-SLR
- Speedlight with stand (or a willing assistant!)
- Speedlight trigger (if required—see right)

## PROJECT THREE

# Be a bit flash

Learn how to use a Speedlight off-camera to add drama to your portraits when shooting outdoors. It's easier than it sounds!

■ **One of the most creative things you can do with your Speedlights is to get them off your camera's hotshoe and learn how to fire them remotely.** This way, you can light your subjects from any direction you choose, not just from the front. You have the freedom either to subtly augment the natural light, or to transform the look of the scene entirely with flash.

There are several ways to trigger an off-camera Speedlight. Some cameras and flashguns can be linked wirelessly so the flash is triggered by

the camera's pop-up flash. This technique is a little limited in that the flash and camera need to be compatible, and there also needs to be a good line of sight between them.

Another option is to use a so-called sync lead – essentially a cable linking your Speedlight to your camera. As you can imagine, the downside of this is that you're then limited by the length of the lead.

A third option is to use a radio transmitter. This is the most reliable and convenient way to trigger a Speedlight, requiring neither leads nor

line of sight. Radio transmitters come in a variety of models to suit your budget. The Hähnel triggers we've used here are a reliable, inexpensive option, but because they're not TTL-compatible, you'll have to set the power manually. Don't be worried about this, though – it actually makes things more intuitive, not less.

In our tutorial we'll show you how to create a moody, dramatic look in an outdoor portrait by under-exposing the natural, ambient light, then using carefully positioned flash to pick out the subject.

Learning how to fire a flash off-camera like this will open up many more doors to creative, stylish portraits. Give it a go and you'll soon be hooked on the technique. ■



**“You can light your subjects from any direction you choose... you have the freedom either to subtly augment the natural light, or to transform the scene entirely with flash”**



## STEP BY STEP | Get moody

How to set up an off-camera Speedlight, and set your camera and flash for spot-on exposures



### 01 Work out the ambient exposure

Set Manual mode on your camera and select a shutter speed of 1/200 sec or less (most flashes won't work at speeds higher than this). Take a test shot to work out the correct aperture and ISO for the ambient light – we set a shutter speed of 1/125 sec at f/2.8 and ISO400.



### 03 Diffuse the flash

Light from a small source like a Speedlight can be quite hard. If you can reflect the light or direct it through a diffusing material, it will be much more flattering. You can use a white brolly attached to a stand or the diffusing panel from a five-in-one reflector held in front of the flash.



### 05 Set the power

Set your Speedlight to Manual mode, then take a few test shots while adjusting the power (either by changing the output settings on the flash, or by changing the distance of the flash from the subject). We settled on a flash output of 1/4 power with the flash positioned to the right.



### 02 Under-expose the ambient light

The next step is to under-expose the ambient light, in our case by decreasing the aperture setting to f/5.6. This gives a darkened image which is, in effect, the base exposure for the image. From here, you can use your Speedlight to pick out your subject.



### 04 Set up the flash

Attach the flash to a stand or tripod, or get someone to hold it – if your flash isn't triggered wirelessly by your camera's built-in flash, now's the time to attach your sync cord or wireless flash trigger (see your trigger's manual for details on how to set up the transmitter and transceiver).



### 06 Work the angles

Experiment by lighting the subject from different angles. Here we've moved the Speedlight up behind the tree for attractive backlighting that highlights the model's fantastic hair. Combined with the dappled sunlight through the tree, the flash light looks entirely natural.

**QUICK TIP** A reflector placed opposite your flash bounces light back at the subject and lifts the shadows. It can also be used to reflect natural light from the sun or sky.

### LOOK, NO WIRES!

Wireless transmitters enable you to trigger your Speedlight from any position you like. They allow much more freedom than sync cables, and are more reliable than optical slaves. They typically feature a transmitter that attaches to your camera's hotshoe, and a receiver that goes on the flash. You can usually set a channel so that the transmitter and receiver recognise one another without interference from similar devices. The more expensive triggers, like Pocket Wizards, offer extra control and features like through-the-lens (TTL) metering, which enables auto exposure, whereas the more basic models like the Hähnel trigger used here require you to set the flash power manually.

## THE MISSION

■ Get started with studio flash by learning how to set up your camera and lights

## TIME NEEDED

■ One hour

## SKILL LEVEL

- Anyone can do it
- Some tricky aspects
- Advanced technique

## KIT NEEDED

■ Home studio flash kit with softboxes and umbrellas

## PROJECT FOUR

# Let there be lights!

Learn how to create classic lighting for portrait photography that works every time by using a home studio lighting kit

■ Investing in a home studio lighting kit is one of the best ways to take your portraits to the next level. You can light subjects from any direction, fix attachments to change the quality and spread of the light, and use a low ISO to ensure the very highest image quality. But studio flash photography can be a difficult beast to master, not least because the

burst of light from the flash heads is almost instantaneous.

There are three main areas of control when using studio flash heads. First, you have control over the quality and spread of the light through use of attachments like umbrellas and softboxes. Second, you can put the head wherever you choose: up high, down low, in front of or behind your

subject, with each position changing the look of your image. Third, you can use the power settings on the flash to control the output, which becomes important when you start balancing the light from multiple heads. Read on to find out how, by controlling these three factors, you can begin to sculpt the light so it behaves exactly how you want it to, every time. ■

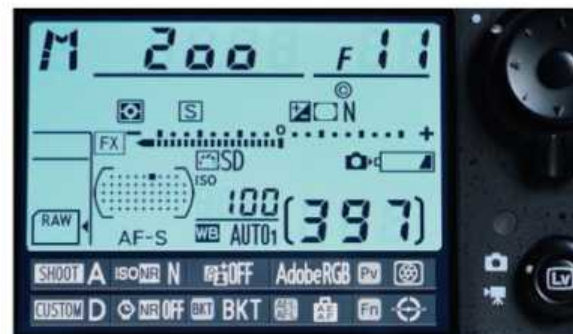


## THE INVERSE SQUARE LAW

■ This law states that if the distance between the light and subject is doubled, they'll receive a quarter of the light. You might think moving a light back from one metre to two metres would halve the strength, but it actually quarters it. To compensate, you'd either need to increase the power output by four times (as in the diagram) or allow for two extra stops of aperture or ISO. You can see the Inverse Square law in action in step 2 where, because of the change in distance ratios between light, subject and background, the background is made much darker when the flash is close to the face.

## STEP BY STEP | Classic lighting set-ups explained

For consistent results, you need to take control of the power and quality of the light from your flash



### 01 First, the camera!

Stock settings for studio flash are manual (M) mode, ISO100, 1/200 sec and f/11. Take a test shot at these settings; if it's too dark, widen your aperture or increase the power of the flash. If it's too bright, do the opposite.



### 03 Right angles

For this image we used 'Butterfly' lighting, positioning a softbox above the head to accentuate cheekbones and create a butterfly-like shadow under the nose. Other techniques include 'Rembrandt', where the shadow of the nose creates a triangle of light on one cheek, and 'Split', where only half the face is lit (see the video for more).



### 02 Soft options

The larger the light source, the softer the light, hence larger softboxes produce gentler light. Distance also plays a part, as moving a light closer effectively increases its size in relation to the subject.



### 04 Balancing act

Setting the output is a delicate task when you're using multiple lights, as the ratio between the different power levels is vital. For a classic lighting set-up called 'Key and Fill', one flash (the 'key' light) provides the main light, while the other (the 'fill') is set two to three stops dimmer to gently lift the shadows and stop things looking too harsh.



# NIKON SKILLS

**QUICK TIP!** When using multiple flash heads, take test shots with each light individually to get an idea of how they will all work together



## ESSENTIAL KIT | Studio flash modifiers

You can attach a massive variety of modifiers to adapt your lighting

### 01 White umbrella

This spreads the flash over a wide area, so it's good for flooding big areas with soft, flattering light.



### 03 Silver umbrella

Silver umbrellas offer a harder light than white ones – akin to using the silver side of a reflector.



### 02 Softbox

Softboxes diffuse the light just like umbrellas, but the narrower spread gives you more control.



### 04 Circular reflector

These work by shaping and directing the flash into a hard beam of light that covers an angle of around 90-120 degrees. They are good for moody shots.

### 05 Honeycomb grid

Grids can be fitted to reflectors to concentrate the light so that it only hits a small area, much like a spotlight. The deeper the grid, the tighter the beam.





## THE MISSION

To use multiple filters for creative effect

## TIME NEEDED

■ One to two hours

## SKILL LEVEL

- Anyone can do it
- Some tricky aspects
- Advanced technique

## KIT NEEDED

- Nikon D-SLR
- Tripod ■ Filter holder
- ND grad filter(s)
- ND filter(s)

## PROJECT FIVE

# Stack 'em up!

The secret to better beach shots revealed: layer multiple filters

■ **Screw-in filters are all very well, but they're limited to a single change or effect.** Using a slide-in filter system enables you to stack multiple filters, so you can balance bright skies, blur moving water or clouds, and even polarise reflections, all at the same time.

When shooting early or late in the day, you're often presented with a sky

that is much brighter than the main, foreground landscape. This is where an graduated ND filter comes in: dark at the top and clear at the bottom, it darkens bright skies without affecting the exposure of the landscape below – and because you can slide them up and down, you can decide where to place the transition from dark to clear (see Step by Step below).

A full ND filter, meanwhile, darkens the whole image. To ensure a correct exposure, you need to set a slower shutter speed, which effectively enables you to blur moving water, clouds and more, even on bright days.

Using both sorts of filters at the same time might sound complicated, but you just have to do things in the right order. Here's how it's done... ■

## STEP BY STEP | The more, the merrier

Use one filter to balance the exposure, and another to enable a long exposure



### 01 Find your sea legs

As you'll be using a slow shutter speed, you'll need a tripod and a remote release. Screw in a filter adapter, then attach the filter holder. If you're using a wide-angle lens, there's a chance you'll catch the edge of the adapter in your shot. Either zoom past it, or crop the image in editing.



### 02 Stay grounded

As you'll be using an ND grad to balance out the sky, you can set your exposure for the ground. Put your camera in manual mode, select an aperture of f/22 and an ISO of 100, and then adjust the shutter speed until the exposure needle lines up with the '0'.



### 03 The first filter

Next, slide your weakest grad into the slot that's nearest the lens, with the dark end at the top, and slide it down until the transition from dark to clear just kisses the horizon – if it's too high or too low it will be obvious in the final image. Take a test shot and check your histogram.



### 04 Two's company...

If the graph fits nicely within the histogram you won't need to attach a second ND grad, but if it's stacked towards the right-hand side, you'll need a second filter to darken the sky even further, until the graph isn't cut off or 'clipped' on the right.



### 05 ...Three's a wow

Once the ND grads have ensured a balanced exposure, it's time to add a full ND to enable a longer shutter speed. A one-stop ND will enable you to double the exposure time, a two-stop ND will enable you to double it again, and so on.



### 06 The right time

Because NDs are very dark, make sure you're happy with your composition before adding one. With the filter attached, increase the exposure time the correct number of stops (see top right), take a test shot, and adjust again if needed.





## WHAT IS A STOP?

■ A lot of references are made to 'stops' with ND grads and NDs. A 'stop' equates to a change in either the shutter speed, aperture or ISO, and denotes halving or doubling of light levels. If you halve the shutter speed (going from 1/60 to 1/30 sec, for example), that equates to a stop. Most D-SLRs will allow smaller increments, so you may need to move the dial two or three 'clicks' before achieving a full stop.

### QUICK TIP

*Rather than buying multiple adapters for your filter holder, use a stepping ring to save time.*



## NIKON SKILLS



## PROJECT SIX

# Stack for sharpness

Get the ultimate depth of field in your outdoor shots by stacking a series of frames with different focus points



## THE MISSION

■ Get huge depth of field without small lens apertures

## TIME NEEDED

■ 1 hour

## SKILL LEVEL

■ Anyone can do it  
■ Some tricky aspects  
■ Advanced technique

## KIT NEEDED

■ D-SLR ■ Kit lens  
■ Tripod ■ Photoshop

■ If you want the maximum depth of field, or near-to-far sharpness, in your outdoor shots, the usual approach is to set a very small lens aperture. However, while this does increase the zone of sharpness in your pictures, there is a drawback. At apertures of f/16, f/22 or smaller, the image detail starts to soften due to 'diffraction' effects.

There's no way round this. It's caused by the way light rays bend as they pass through small apertures. In the days of film it was less obvious because the resolving power of film

was lower than the digital sensors we use today, and it was harder to magnify images to the levels at which we can view them at on a computer screen. Now, though, the drop in sharpness at small lens apertures is quite obvious. To get the best quality with today's cameras and lenses, you don't want to shoot at apertures smaller than f/11 if you can avoid it.

To solve the problem of diffraction, here's a technique borrowed from the world of macro photography. It's called 'focus stacking', and it means taking a series of shots with the lens

focused at different distances, then combining them in Photoshop.

In macro photography, focus stacking is a painstaking process because the depth of field is very shallow at short focus distances – you may need to take as many as 50 shots to make sure every part of the subject is sharp in at least one of them. But when you're shooting outdoors, you're focusing on objects further away. As long as you use a medium aperture of f/8, the depth of field for each shot should overlap enough to leave no 'focus gaps' in your final picture.

Our finished picture is made up of just four frames. They've been blended using Photoshop's automatic Photomerge and layer blending tools – there's really nothing to it. ■

“Diffraction is caused by the way light rays bend as they pass through small apertures... To get the best quality with today's lenses you don't want to shoot at apertures smaller than f/11”



## STEP BY STEP | Find your focus

This is a two-part technique: first you shoot, then you blend



### 01 Tripod time

We're at Beer beach in Devon, where fishing boats are pulled up on to the shingle, making great subjects for photographs. Use a tripod so that the camera can be fixed firmly in place – the frames need to line up as closely as possible for the blending to work.



### 03 Shoot your sequence

Start off by focusing on the object nearest the camera (it's the rope on the bow of the first boat in this picture), then take a second shot focused on an area one to two metres away, another focused around five metres away and, finally, one more focused at infinity.



### 05 Blending the layers

Photoshop will create a new document with each picture added as a new layer. Open the Layers palette, select all the layers and use the Edit>Auto-Blend Layers command. In the Auto-Blend Layers panel, select Stack Images and Seamless Tones and Colors.



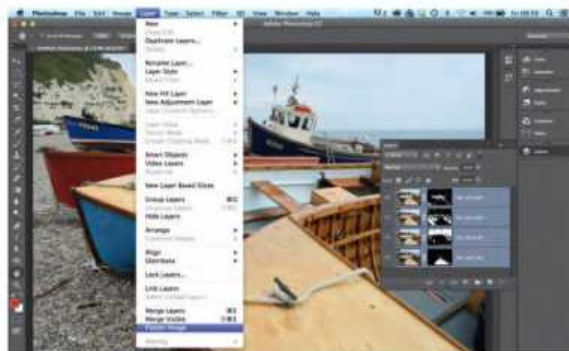
### 02 Camera settings

Set the camera to single-point AF mode so that you can control where it focuses, and switch to Live View so that you're able to position the autofocus point more accurately. Now switch to A (aperture-priority) mode and set the lens aperture to f/8.



### 04 Photomerge options

On your computer, open all four photos in Photoshop and use the File>Automate>Photomerge command. Select Auto in the Layout panel, left, and click the Add Open Files button on the right. Make sure that all three boxes at the bottom are unchecked and click OK.



### 06 Flatten your image

Photoshop will now automatically pick out the sharpest areas in each frame and mask out the rest. If you're happy with the result, you can use the Layer>Flatten Image command to flatten these layers and masks into a single, sharp image. It's that simple!



## SETTINGS LOCK-DOWN

■ We used aperture-priority mode to shoot our sequence of shots for the sake of simplicity, but you may notice differences in the exposure between frames, even if the light stays constant. That's because Nikon's Matrix metering system uses focus point information to help it calculate the exposure, and when you change the focus point the exposure could change too. If this happens, switch to manual mode – this will lock the shutter speed and aperture settings so that all your frames are identically exposed.

**QUICK TIP**  
Watch out for passers-by, gulls and other moving objects. These can sneak into one of your frames unnoticed and spoil the whole sequence



## THE MISSION

■ To keep detail in the sky and foreground of your landscapes

## TIME NEEDED

■ Two hours

## SKILL LEVEL

■ Anyone can do it  
■ Some tricky aspects  
■ Advanced technique

## KIT NEEDED

■ Nikon D-SLR  
■ Wide-angle or kit lens  
■ Tripod  
■ Elements 12

## PROJECT SEVEN

# Head for the hills



Get more detailed landscapes by shooting and combining images for the HDR look

■ When you shoot landscapes where the sky is much brighter than the foreground, the level of contrast makes it impossible to keep detail in both areas. The traditional way to keep detail in both would be to use a graduated neutral density filter, but if you don't have these there are alternative solutions.

One way to capture detail in all areas is to shoot three images, one exposed for the shadows, one for the

mid-tones and one for the highlights, and combine them together in special software. This is known as high dynamic range (HDR) imaging, and it's a great way to capture more highlight and shadow detail. However, it can be easy to over-cook the adjustments available in HDR software, producing garish, unrealistic results.

There is a simple alternative technique that you can use for many scenes, which avoids many of the pitfalls of conventional HDR imaging.

“It can be easy to over-cook the adjustments available in HDR software, producing garish, unrealistic results... There is an alternative technique that you can use for many scenes”



You simply take at least two images, one exposed correctly for the sky and another exposed correctly for the foreground. You then combine them using a Layer Mask in Photoshop or Elements, revealing the correctly exposed parts of both photographs. ■

## STEP BY STEP | Recapture the detail

Shoot and combine images to capture more highlight and shadow detail in your landscapes.

We've used a simple method of shooting two images, then combining them in Photoshop Elements to retain detail in this landscape. You could achieve similar results by processing a single RAW image, but when the contrast between the sky and foreground is high there's a danger of much more noise in the shadow areas and also artefacts in the highlights from trying to recover detail when using this method.



### 01 Keep it steady

Even if you can use a fast shutter speed it's best to use a tripod, to make it easier to line up your two images. It can be easy to move the camera between exposures, so make sure that all of the levers and locks are secured, and the legs are positioned on solid ground. Fire the camera with a remote release to minimise any chance of moving it.



### 02 Go manual

Using manual mode will give the most consistent results. Set the camera to manual focus and choose an appropriate White Balance preset to prevent any changes in focus or colour between the exposures. You can shoot in either RAW or JPEG, but if you choose RAW you need to process both files with similar settings. ▶





**QUICK TIP!** Shooting handheld might seem a quick and easy alternative, but it's harder for the software to line up the images later

**SKY**

Nikon D800, Nikon 17-35mm f/2.8,  
1.3 secs, f/16, ISO50

**GROUND**

Nikon D800, Nikon 17-35mm f/2.8,  
2.5 secs, f/15, ISO50





## IN-CAMERA HDR

Most Nikon cameras offer an in-camera HDR option to help you when shooting high contrast scenes. You'll find this in the Shooting Menu on the camera, and offers different strengths of effect. But you can only use this when shooting JPEG images, and like HDR software, using the higher strength settings can produce visible artefacts, giving unnatural-looking results.



## 03 Take two exposures

First set the shutter speed and aperture to expose the foreground correctly and shoot. Then, without changing the aperture, use a faster shutter speed to expose the sky. Check the exposures on the histogram display to make sure that there is highlight detail in the sky exposure and shadow detail in the foreground exposure.



## 05 Add a mask

With the top layer active, click on the Layer Mask icon in the Layers palette. Pick the Quick Selection Tool from the Tool palette. With a soft brush of 1000 pixels, paint over the sky until 'marching ants' enclose it. Click on the layer mask. Pick Edit>Fill Layer. Ensure that Black is selected in the drop-down menu of the dialogue box. Click OK.



## 04 Two become one

Open your images in Photoshop Elements, then click on the foreground image. Pick Select>All from the top menu (or press Ctrl+A). Then Edit>Copy (Ctrl+C) to copy the image to the clipboard. Now click on the sky image and go to Edit>Paste (Ctrl+V) to add the foreground image as a layer above the background.



## 06 Finishing touches

Select a large, soft-edged brush. Set the foreground colour to black, the opacity to 20%, and paint over the area between the sky and the land until there isn't an obvious transition. To make the sky look more natural, click on the bottom layer, select a Levels Adjustment Layer, and drag the middle tab to the left and the left tab to the right.

## KEY SKILL | HDR software problems

If you're not careful, you can end up with flat, low-contrast shots or ugly haloes in your images

While combining two images is the perfect solution for many landscape images, it can be difficult to get a smooth transition if there is a lot of fine detail in the foreground, such as trees, foliage or buildings. Using HDR software can be easier in these situations, but you need to take care with the adjustments and settings to avoid some common problems when using HDR software such as Photomerge, Photomatrix or Nik HDR Efex.



## Low contrast results

If you go too far when recovering detail in HDR software, you'll end up with very low contrast results. Try to avoid flat-looking images.



## Haloes round objects

These can appear around areas in the scene where dark and light tones are close together. To avoid this you need to steer clear of using the higher strength or detail settings in your HDR software.



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## THE MISSION

Shoot a drop of water with a map behind to create a tiny globe

## TIME NEEDED

One hour

## SKILL LEVEL

- Anyone can do it
- Some tricky aspects
- Advanced technique

## KIT NEEDED

- D-SLR
- Speedlight
- Macro lens
- Tripod
- Water dropper

## PROJECT EIGHT

# Capture the world

Create amazing water droplet globes with a macro lens and flashgun

**Light moves more slowly through water than it does through the air.** This causes the light rays to bend at the point where they move between the two media. The phenomenon is called refraction, and it offers lots of opportunities for creative projects. A drop of water, for example, will refract the light from the scene behind, turning it upside-down and bending it.

Here we'll show you how to create a tiny globe by positioning a map behind a drop of water. To capture falling drops clearly you'll need to shoot in a dark room using a Speedlight, so that the drops are frozen by the burst of light. Whenever a flashgun is used it's a good idea to get it off the camera and fire it remotely. We've positioned the flash behind and to the side of our print here, then used Nikon's Flash

Commander mode, which triggers the Speedlight using signals from the camera's pop-up flash.

A macro lens is essential to get in close enough to fill the frame, and you'll also need a tripod to keep the camera still. You'll have to tweak the position of the map and water, and you might need to shoot a few frames to get the timing right for a perfect drop, but the results are worth it! ■

## STEP BY STEP | Water World

More ocean in the drop than drop in the ocean...



### 01 Position the map

Position a world map upside-down with a glass of water in front of it. If you don't have a world map, download one from [www.nasa.gov](http://www.nasa.gov) and print it at A3. Set your camera on a tripod, and fix a water dropper to a stand above the glass so that the drops hit the same spot every time they fall.



### 02 Light the print

Angle an off-camera flash towards the map. Ours was triggered using the camera's pop-up flash and Nikon's Creative Lighting System, but a wireless trigger or short cable will also work. Set the flash power low so it's fast enough to freeze the motion of the droplet. We used 1/32 power.



### 03 Think about settings

Select Manual mode and set the shutter speed to your camera's max sync speed (1/250 sec in this case). You'll need a small aperture for maximum depth of field, but you also want to use low flash power, so you'll have to increase the ISO. We set the aperture to f/16 and the ISO to 400.



### 04 Stay sharp

Precise focusing is tricky. The solution: grab a pencil. Let a few drops fall to determine where they'll hit the water, lay the pencil along the top of the glass at the point where they fell, switch to manual focus and focus on it, then remove it.



### 05 Dim the lights

The drops will move fast, and any light other than the flash may blur their motion, so darken the room to keep ambient light to a minimum (it doesn't need to be pitch black). Allow the drops to fall and fire the shutter as they hit the surface.



### 06 Time it right

You need to press the shutter at the moment the drop hits the water, which is tricky. Be prepared to spend a while dropping and shooting until you capture a spherical drop. When you do capture one, check it's sharp using your LCD screen.



**QUICK TIP** If your camera doesn't feature Nikon's Creative Lighting System, or your Speedlight is incompatible, try setting your Speedlight to its optical slave mode, then use your pop-up flash at its lowest power setting to trigger it



## IN A FLASH!

■ Your Speedlight's flash duration changes based on its output. For example, at full power our SB-900 has a flash duration of about 1/880 sec. At its lowest setting – 1/128th power – the duration is an almost instantaneous 1/38,500 sec. The lower the power, the shorter the duration. For capturing split-second action you'll need a dark room. This way the flash duration effectively becomes the length of the exposure, as the ambient light is negligible, and shouldn't affect the exposure.



## PROJECT NINE

# Go out with a bang

See how a simple dongle can transform your phone into a sound trigger, allowing you to capture split-second action in stunning clarity

### THE MISSION

To capture high-speed action with a sound trigger and Speedlight

### TIME NEEDED

■ 30 minutes

### SKILL LEVEL

- Anyone can do it
- Some tricky aspects
- Advanced technique

### KIT NEEDED

- Nikon D-SLR
- Tripod
- Smartphone (iOS or Android) ■ Speedlight with stand
- Triggertrap phone dongle and flash connection
- Triggertrap app (free)
- Water balloons
- Food colouring

■ **High-speed photography enables you to capture moments that are imperceptible to the naked eye.** You'll need a few bits of kit for it, but you can get great results with a surprisingly simple setup. The most important factors are precision and speed: you need to capture the exact moment the action occurs, and to use an exposure that's fast enough to freeze the motion.

A sound trigger is ideal for capturing any action that creates a noise. When the trigger detects the noise, it will fire the camera shutter or Speedlight, giving far more successful results than you'd get if you attempted to trigger the shutter by hand. We've used a sound trigger here

to capture an exploding water balloon, but you could use the same technique to freeze the motion of any high-speed action that creates a pop or bang.

You might think sound triggers are expensive, but there's a great gadget from Triggertrap that costs just £23 (\$35) that pairs your camera or flash with your smartphone, enabling you to use your phone's built-in microphone, camera, clock and vibration sensors to trigger your D-SLR.

Triggertrap's D-SLR attachment is fine for most uses but, as with most triggers, there's a slight shutter lag. For high-speed photography, that split-second makes all the difference. Luckily, Triggertrap has an extra flash attachment that connects your phone

to your Speedlight rather than your D-SLR, eliminating shutter lag.

Flash is ideal for high-speed photography. The burst of light is incredibly fast, particularly at a low power setting. When set to 1/128 power, the Nikon SB-910 Speedlight we used has a flash duration of 1/38500 sec – fast enough to freeze the action. The problem is, we need the camera's shutter to be open when the sound trigger fires the flash, but we don't want any ambient light to creep into the exposure. The solution is to take the shot in total darkness. This way, you can open the shutter for as long as you need to, and the only illumination will come from that incredibly fast burst of flash. Here's how it's done... ■



## STEP BY STEP | Make some noise

Capture all the explosive energy of a bursting balloon...



### 01 Take position

The shot needs to be taken in total darkness, so set up in a room that can be made pitch black. Alternatively, shoot outside at night. Attach your camera to a tripod. Switch to manual focus and pre-focus on the spot where the action will occur. Position your flash on a stand to one side.



### 03 Attach the trigger

Download and open the free Triggertrap app from the Apple or GooglePlay stores. Open the app, turn your phone volume to full and go to the Sound sensor. Set a sensor volume level and make a noise to check the flash fires.



### 05 Choose Manual mode

Set Manual mode. Take a couple of test shots in total darkness while firing the flash to work out the exposure. Because the output is low, you'll need a high ISO and wide aperture. We used ISO1000 and f/4.5, with a four-second shutter speed. This was comfortably long enough to get into position and burst the balloon.



### 02 Set flash to Manual

Set Manual flash mode and choose the lowest output (1/128 power here). This ensures a super-fast flash duration that'll freeze the action. Attach the Triggertrap dongle to your phone and connect the flash adaptor (sold separately) to your Speedlight's hotshoe mount.



### 04 Just add water

If you want to use water balloons, try putting a few drops of food colouring inside the balloon before filling with water. Once you've added the water, blow a little air into the top to ensure it makes a loud bang when popped.



### 06 Burst the balloon

Turn out the lights, begin the exposure and burst the balloon. If you're shooting this alone, use your D-SLR's self timer or attach a remote release to begin the exposure. Try to keep the hand that bursts the balloon out of the way, and once the flash fires, get your hands out of the frame quickly in case of a second flash.



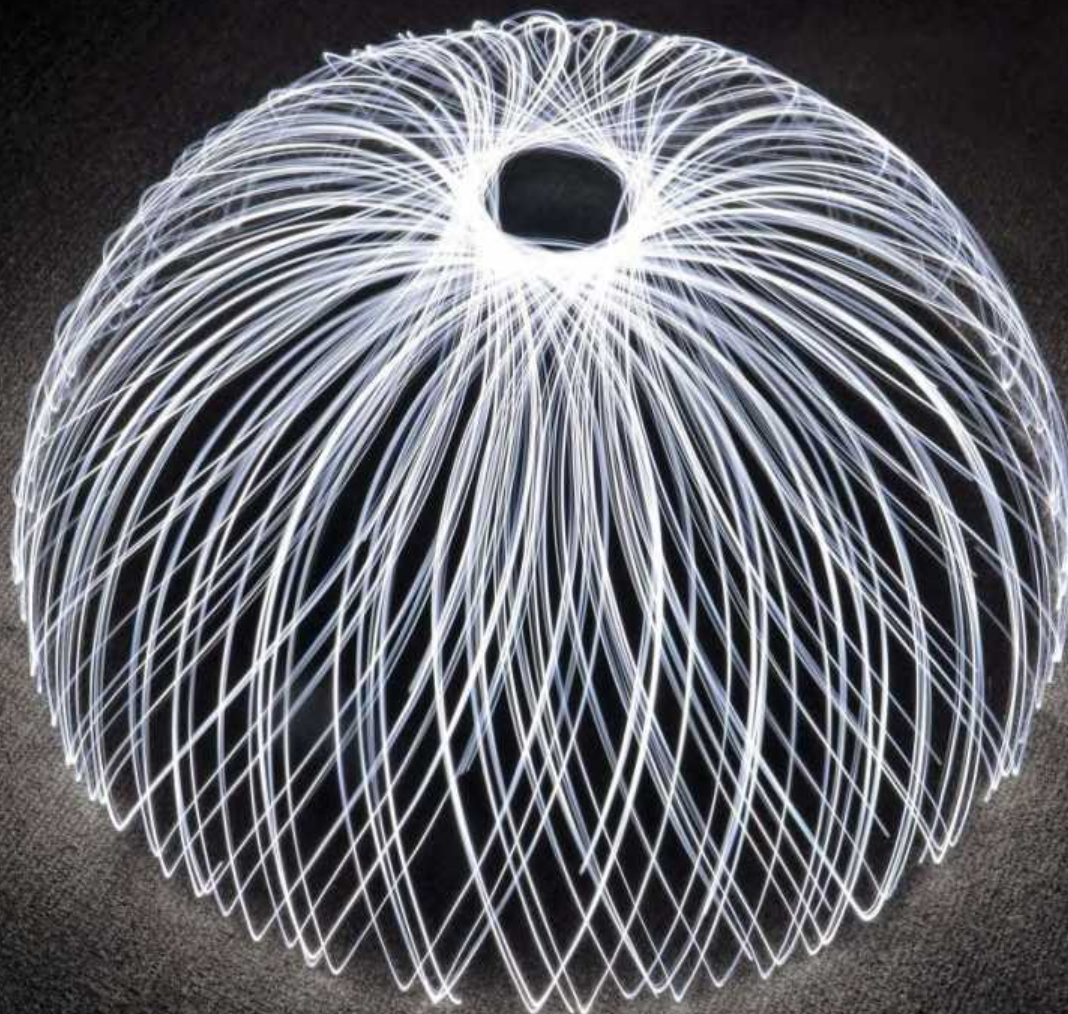
### A HAPPY ACCIDENT

The reason for shooting this in total darkness is to light the action purely with the flash. Any ambient light falling on the objects could result in motion blur, spoiling that pin-sharp clarity. However, here we didn't take into account the little red LED light on the wireless remote trigger that we used to begin the long exposure. It's what's causing the streak of red at the top of the splash of water. In this case it added to the effect – a happy accident – but this was pure luck. It shows how important it is to take the shot in complete darkness. Any ambient light will be added to the flash light and show up in the final image.

#### QUICK TIP

Once you've captured the action, use Photoshop to enhance the colours, improve the details and apply sharpening. Paint any unwanted areas black to hide them.



**DOME ALONE**

Nikon D7100, Nikon AF-S DX 18-105mm  
f/3.5-5.6G ED-IF VR, 6 secs, f/22, ISO200

**THE MISSION**

■ To get creative with light trails at home

**TIME NEEDED**

■ One to two hours

**SKILL LEVEL**

- Anyone can do it
- Some tricky aspects
- Advanced technique

**KIT NEEDED**

- Nikon D-SLR
- Flashgun
- Christmas lights
- Bicycle wheel
- Stunt peg

**PROJECT TEN**

# Go for a spin

Create an eye-catching light dome effect using an old bicycle wheel, a string of Christmas lights and a few simple techniques

■ **Light trail images are very simple to create in a outdoor situation; simply put your camera on a tripod near a road at night, set it to a long shutter speed and wait for a car to drive past.** The resulting image will feature lines of light across the frame, often without the subject visible, showing a trail of movement.

More and more photographers have been using this simple technique to develop their own signature image, and Andrew Whyte came up with a particularly innovative way to use light trails. The light dome is made

by attaching some fairy lights to the outside of a bike wheel, then spinning it on the floor. The circular motion combined with the light source creates a dome shape when captured using a long shutter speed, and the resulting effect can either be introduced into other images or used as the sole focal point.

This isn't the only method of innovating with light trails, as they can be combined with other techniques to create some impressive end results. For example, you could mix them with rear-curtain flash,

which fires the flash at the end of an exposure rather than in conjunction with the shutter release. This merges a standard image with a light trail, so you can quickly and easily create a superhero-style image (see page 103).

Using these basic techniques there are many more ways to work light trails into landscape, portrait and action images, giving them a 'wow' factor that would be difficult to replicate in post-production but that's simple to create in-camera. With a small outlay of cash and a little patience there's no end to what you can achieve using light trails.

Many thanks to The Bike Workshop in Bath ([www.bath-bike-workshop.org.uk](http://www.bath-bike-workshop.org.uk)) for donating the wheel and other parts for this tutorial. ■

“Light trails can be combined with other techniques to create some impressive end results... With a small outlay of cash and a little patience there's no end to what you can achieve”





## STEP BY STEP | DOME, SWEET DOME

Setting up the shoot takes time, but the results are well worth it



### 01 Reinventing the wheel

First of all you'll need a small bike wheel. You won't be damaging it in any way, so one from a working bike will be fine. Otherwise there are plenty of bicycle workshops that accept donations which will be worth contacting.



### 02 Let there be lights

Next, you need battery-powered fairy lights. Mains-powered lights can work, but the cable can get snagged when the wheel is spun. Tape the lights to the rim of the wheel and the battery unit to the spokes. The wheel should spin freely.

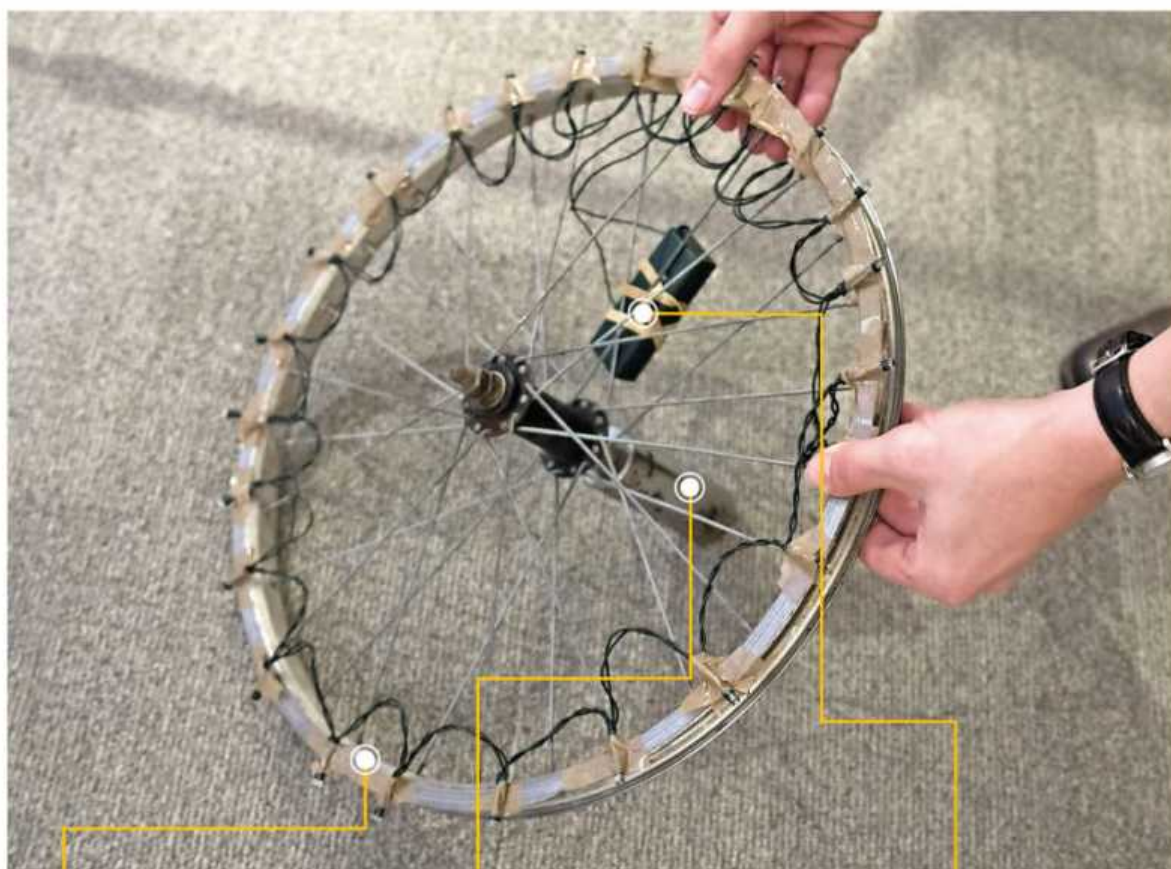


### 03 Pegged out

A stunt peg screws onto the wheel axle. They're available from most good bike stores, and can either be screwed directly onto the axle or secured using a nut. The peg is then used as a pivot to spin the wheel when it's on the ground.

## The completed wheel, with lights

Take a closer look at how your wheel, lights, and stunt peg should fit together



#### Bike wheel

The wheel can be from an adult's or child's bicycle. It won't be damaged by this project, so it can be from a working bike.

#### Stunt peg

You can buy a stunt peg from most cycling shops. It screws onto the end of the bike wheel axle, and allows the wheel to spin on the floor.

#### Light control

Be sure to attach the controller for the lights to the spokes of the wheel, otherwise the cable will become caught when the wheel spins.

#### QUICK TIP

*Try this project with colourful lights, or arrange them all at one side of the wheel for a very different effect*





## 04 In the dark

Because you'll need very little light, and only a small amount of the background will be in shot, a light dome image can be captured in virtually any environment so long as it's dark enough. As a result, working indoors can be beneficial, as then it's easy to use a tripod and control the lighting.



## 05 Take it steady

You'll be dealing with long shutter speeds, so the extra stability of a tripod is required. This also allows you to concentrate on moving the wheel, or directing a friend to do so. This shot depends on clean, sharp lines, so ensuring the camera is kept steady is essential.

## 06 Do look down

To avoid any unwanted light sources from becoming an issue in your image, set the tripod up at full extension and shoot down onto the wheel. You'll need to set it up about half a metre away from the tripod legs. Give the wheel a quick practice spin before you get started, just to check that you've got enough space.



## 07 Find your focus...

You'll need to set your focus point to the floor beneath the wheel, using the autofocus to begin with, then switching to manual focus to lock the focus. Focus isn't particularly important for the light trails themselves, as motion blur is a major part of the final effect.



## 08 ...and search for a speed

Getting the shutter speed right takes a bit of experimentation as you'll need a decent delay in order to get the wheel spinning, but if you expose for too long the floor will become visible. Start at one second and advance from there, going up to around six seconds at most.



## 09 Go narrow

Set a fairly narrow aperture, such as f/16. The important thing to remember is that the narrow aperture will combat the lengthy shutter speed to maintain the levels of darkness, so don't be tempted to switch to shutter-priority mode and let the camera determine it.



## 10 Say no to noise

Another setting worth taking control of, rather than letting the camera determine it for you, is the ISO. If the camera is allowed to increase the ISO to combat the lack of light this can create noise, which appears as red and green specks, so it's worth keeping the ISO at 200.



## 11 Choose your time

Switch the camera to timed release, which will give you a countdown before taking the shot. This gives you time to ask an assistant to spin the wheel, or to do it yourself. You should only lightly touch the wheel to spin it, and make sure you or your assistant aren't in shot between spins.



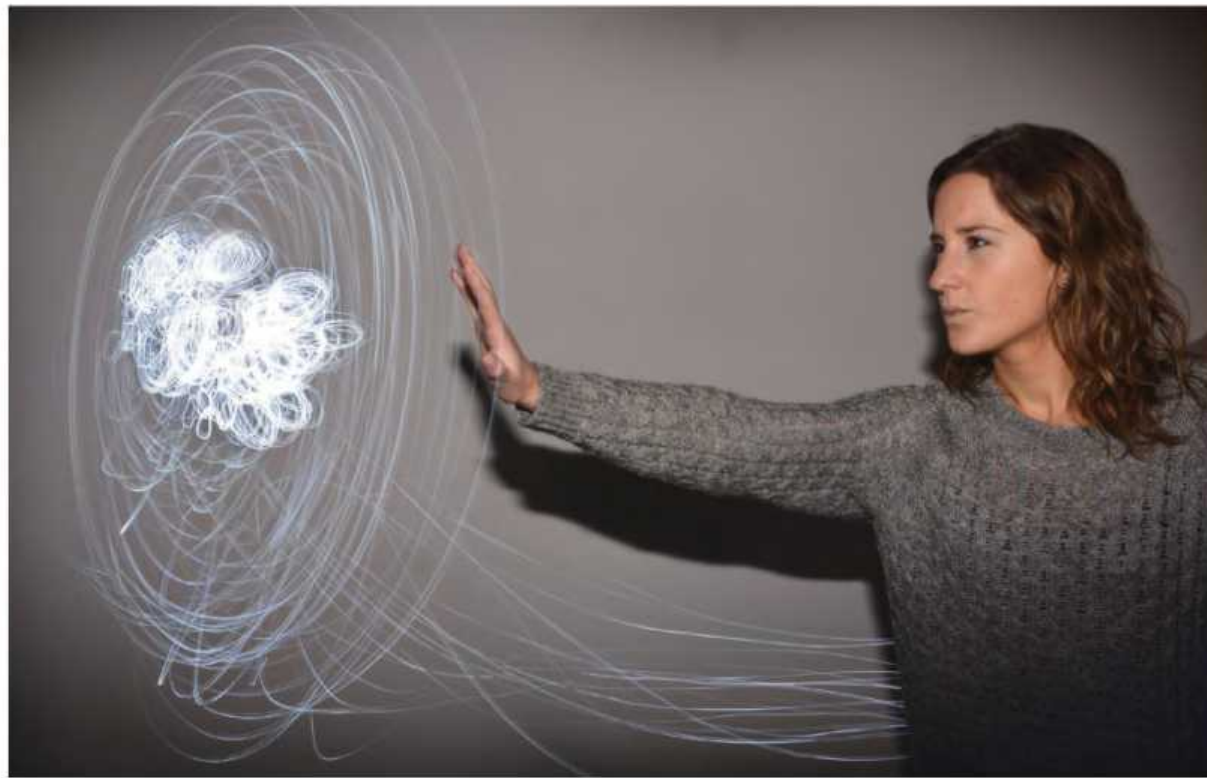
## 12 Shoot!

When you take the image, keep spinning the wheel to maintain the momentum, only stopping once you're sure the shot has been taken. Bear in mind that the time taken to save the shot will be comparatively long, so you might need to wait a few seconds before seeing your results.



## TAKE IT FURTHER | Capture a superhero on camera!

Try using second-curtain flash to create a super light trail effect



### WHAT IS REAR CURTAIN FLASH?

■ In Rear Curtain mode the flash is activated at the end of the shot, rather than being triggered by the shutter release. This mode is used almost exclusively for getting a sharp image after deliberately recording motion blur using a slow shutter speed. This can be useful for shooting a portrait at night, or an action image, when you don't want to remove the creative effect of blur.



#### 01 Prep the shot

You can combine a portrait shot and a light trails shot without much trouble, as long as you add a flashgun to the kit you've already used for the light dome image. Frame a person with plenty of room to one side, as you'll be occupying the space around them with a light trail.



#### 02 Set the pose

Although a slower shutter speed will be used, the flash will fire at the end of the shot, so as long as it's quite dark, the flash will freeze any movement. Switch your D-SLR to rear curtain mode, which you can find by scrolling through the flash options (see box, top right).



#### 03 Take the shot

Set the camera to a shutter speed of three seconds, and an aperture of f/22. You'll need to use the timed shutter again. Fire the shutter, then stand next to your subject and create the light trail using your battery-powered lights, then get out of the way before the flash fires!

## WHAT HAPPENS IF I SELECT THE WRONG SHUTTER SPEED?

Trial-and-error is part of this project, so it's inevitable that you'll pick the wrong speed sometimes

■ Shutter speed is the key to this technique: it needs to be slow enough to capture the trails, but not so slow that they blow out completely. As can be seen here, the difference between too quick and too slow is obvious. The perfect shutter speed allows you to complete the motion, which is why using the self-timer and having someone to help you is important.



TOO FAST



TOO SLOW

**QUICK TIP**  
Don't forget, each image retains setting information, so if you've altered anything and can't remember the shutter speed or aperture, check the details of previous shots in playback

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- A hand holding a fan of 'PLUS NEW-LOOK TIPS CARDS ARE BACK!' cards.
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# CASH WITH YOUR CAMERA



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This dramatic landscape won the stock image category of *The Guardian* photographic competition





## MAKE CASH WITH YOUR NIKON

### 01 COMPETITIONS AND MAGAZINES

*In the first part of this section, Chris Rutter explains how you can start earning money from your photography*

From the major expense of a new camera or lens, to the cost of all of the smaller accessories and even time that you need to spend shooting, there's no getting away from the fact that photography can be an expensive hobby. But the rewards should outweigh the costs.

For many this is simply the enjoyment and pride in producing good images, but there are also many ways that you can get some financial reward from your photography, which is where this new series comes in.

Throughout this chapter we'll show you how you can make some cash from your

Nikon, from how to get a little cash in your spare time to going the whole hog and giving up the day job to make your living from photography. Here we'll start with something you can do in a few evenings, by entering competitions and submitting your images to magazines.



Don't necessarily enter the competition with the biggest prize – find one that suits your preferred shooting style or subject to increase your chances of success

## COMPETITIONS

### WHERE TO LOOK

At any one time there are hundreds of photographic competitions around the world open for entries. The key is finding the right one for you. With prize values running into thousands of pounds/dollars, it's tempting to jump straight for the extremely prestigious competitions such as the

Landscape Photographer of the Year, Travel Photographer of the Year or Wildlife Photographer of the Year. However, these high-profile competitions attract thousands of entries, many of extremely high quality, so your chances of winning are pretty slim. Rather than only looking at these well-known competitions, it's worth starting out by seeking out some of the





If you've missed the entry date for one year's competition, 'bookmark' the web page and visit it every few weeks to check the opening of next year's

less prestigious national or international contests.

You could be better off starting out by entering smaller, local competitions, as although the prizes may not be as generous as those awarded to the winners of the major competitions, your chances of winning, or at least being shortlisted, are much better. One other advantage of these smaller competitions is that they often don't require you to pay the entry fees that many national and international competitions charge.

Entry fees are also something that you need to weigh up when entering larger competitions. While it's a fact of life that many extremely reputable competitions charge them, you need to decide whether the amount being charged is reasonable compared to your chances of winning, the prize on offer and also the prestige of the competition.

## COPYRIGHT AND USAGE

Whenever you enter your photograph into a competition

you will be granting the organisers a limited right to use your image, but these usage rights can vary from one competition to another. You will find the detail in the small print in the terms and conditions, so it's worth checking what they are before entering.

Almost every competition will expect you to allow them to use the images you submit to help promote and advertise the competition, including using them in any book or exhibition that's connected with the contest. But you should also look out for clauses that give the organisers the right to use the images in other ways (even giving them the right to free usage forever). This free use of the image is most commonly found when the competition is free to enter, as this access to 'free' images may be why the organiser is running the contest, but it can also be found in the terms of other competitions. If you are serious about making money from your photography, avoid competitions where they ask for these types of usage rights.

## THE REWARDS

The obvious reward for winning any competition is the prize on offer. These can range from genuinely useful items such as money or new camera kit, to the potentially useless. But even unwanted prizes can be sold to provide you with some cash. There's also the potential to use winning a competition as a good way of gaining exposure for your photography. This is much more difficult to quantify than the prize, and will ultimately depend on what you want to achieve with your photography, but when it comes to pitching for work later on, being an award-winning photographer (particularly in one of the larger, more prestigious competitions) won't do you any harm whatsoever.

## DOS AND DON'TS OF ENTERING COMPETITIONS

### DO

- Read the competition terms and conditions carefully, and follow them to the letter
- Make sure that your image fits the theme of the competition
- Try to shoot images specifically for a competition theme, rather than relying on existing images

### DON'T

- Get too downhearted if you don't win – there are often thousands of entries
- Enter images that aren't technically excellent
- Forget to caption/label your images accurately and according to the competition rules



## GOING PRO: PART 1

New Nikon pro photographer Graham Parker shares what he's been up to on his journey to turning professional. It's go for launch time...

Most keen amateur photographers think it would be easy to become a full-time photographer. I don't feel I fit into that category, but I've been thinking about it for years, so to get the ball rolling, I drew up a list of the most important things I would need to get my name out there:

- Buy a domain name
- Set up my own website
- Set up a Facebook page

I opted for a Squarespace website ([www.squarespace.com](http://www.squarespace.com), \$8 per month) as they can be tailored just by tweaking a few settings. I decided to call it [www.grahamparker.com](http://www.grahamparker.com), and to keep things simple I made the landing page my portfolio page, with all the other pages leading off it.

The Facebook page was easy to set up, and as one of my interests is pet photography I decided to create two, [www.facebook.com/grahamparkerphotography](http://www.facebook.com/grahamparkerphotography) and [www.facebook.com/ThePetPhotographer](http://www.facebook.com/ThePetPhotographer). 'Likes' don't pay the bills, but I believe that it's important to have a Facebook page.

Next up: camera kit. Like most photographers I could create a never-ending list of all the things I'd like, but as I hope to be working out of a studio, it was important to get that sorted at the most reasonable price possible. I've already got the cameras and lenses I need, but I needed lights, a light meter and a studio backdrop, just for starters.

After shopping around for lights, I chose an Elinchrom 400/400 D-Lite 4 RX Softbox Kit (£629, \$849). This contained all the bits I needed, including a remote trigger. I also invested in a Sekonic FlashMate L-308S Light Meter (£150, \$200) and a durable vinyl backdrop (£317, \$450) – as I'm going to be photographing pets I need to be able to clean it. I ended up buying one from [www.studiodecor.co.uk](http://www.studiodecor.co.uk).

All I needed now was something to hang it on; luckily a good friend of mine made me some brackets and found me a metal pole to hang the vinyl on. Now all I have to do is find somewhere to set them up so I can start shooting!

## I DID IT! MAGDALENA WASICZEK, INTERNATIONAL GARDEN PHOTOGRAPHER OF THE YEAR WINNER

■ "Sometimes I take a picture and bingo, I get it right in one shot. But sometimes I can spend all day shooting and fill up my memory card with pictures, and when I check them on my computer I delete them all because I cannot find even one shot worthy of attention."

"Winning the International Garden Photographer of the Year, it provokes a mixture of emotions: happiness, pride, disbelief... but it also brings pressure to not lower the bar in the future."

"This award is very important because it provides an incentive for further work. Winning the contest also teaches humility and patience. It gives opportunities and opens doors – but that does not mean our careers then roll themselves forward on merit alone, you have to keep striving."

This year's International Garden Photographer of the Year competition is open for entries. Go to [www.igpoty.com](http://www.igpoty.com) for more details on all nine categories, plus information on how to enter.



# SUBMITTING TO MAGAZINES

## HOW TO GET STARTED

Many photographic magazines have a readers' pictures, gallery or showcase section, which is a great place to start. These won't offer the highest rewards, but they can be a stepping stone to getting your images published elsewhere in the magazine, or even in other publications. If you have some great seasonal images of your local area you could also try submitting a small selection of images to a local interest magazine or publication, rather than starting out with a large national or international organisation.

If your photos are up to scratch, getting your foot in the door of any publication is pretty simple, as they will

all be on the lookout for new and striking images. For your initial submission try sending a small selection (up to 10) of low-resolution JPEG images, along with a link to your website if you have one, via email. This initial contact is pretty crucial, so make sure that the images that you send are your best work, and don't include any 'fillers' to make up the numbers. Also, don't be tempted to write a long letter to introduce yourself or your images. Keep your email reasonably brief, but include any relevant information, and if the magazine likes your images they'll be in touch to get more detailed information.

Remember that most magazines are planned and



put together several months in advance. This is particularly important if the images you are submitting are seasonal, such as landscapes, wildlife or even sports. Submit images that have to be taken at a specific time of year a few months before this season starts. For example,

images of spring flowers need to be at the magazine in December to stand the best chance of being considered.

## OTHER INTERESTS

Remember that it's not just photography magazines that could publish your images. If you have another hobby or interest that you shoot, there is almost certainly a magazine or publication that covers this activity. You'll need to do a little research to investigate the possibilities

within each magazine, and identify how and where they use images, then try getting in touch with the magazine to see whether they are interested in publishing your images, and whether it's worth sending them a selection of your work.

## PERSISTENCE AND PERSEVERANCE

Getting your work published can take a little time and effort on your part, but there's a fine line between being persistent and being pushy. Most magazines don't have time to go through all of the submissions they receive every day, so it's often done around once a week, and it then takes some time for the final decisions to be made. So once you have sent off your photographs you may not get a reply immediately, but if you haven't heard anything in a couple of weeks it's worth following it up with another email. Don't be too pushy, or bombard them with emails demanding to know what is happening, though, as this can make it less likely that they will use your images.

It's also tempting to send the same (or similar) images to several publications, to maximise your chances of getting published, but this is best avoided, as if you get featured in two rival magazines



Many publications pay for great images to run in their gallery pages – this is from our sister magazine, *Digital Camera* – but the quality has to be spot-on

## IN THE KNOW 'MAG' SUBMISSIONS

■ You'll save yourself a lot of time, and be looked on more favourably by magazine staff, if you make sure your images are suitable for a particular publication before you submit any. We need photos shot on Nikon cameras in *N-Photo*, for example, while our sister magazine *PhotoPlus* is Canon-only. The same applies to content: if you pitch a feature, does it fit in with a particular section in the magazine? Most magazines are quite templated, and won't consider anything that doesn't fit an existing section. Many publications have sections where they ask for (and pay for) reader submissions, and that's often the best place to start.







Seasonal images need to arrive at the magazine at least three months before they will be used, so they can be planned in

neither are likely to deal with you again.

To get regular work with a publication you'll need to prove that you can provide consistently high-quality images, and be easy to contact. While quality images will always be in demand, magazines won't use them if they can't contact you to get any further information or confirm that you are happy with the terms of the contract.

## NEXT STEPS

There are several ways that you can use these first published images to help further your

photographic ambitions. Once you've had some initial work accepted you can move on to submitting article or editorial ideas, particularly if you are able to write to a reasonable standard. Once a magazine knows your work they are more likely to use your images, and ultimately they may even contact you if they are looking for images that they know you might be able to supply.

The better your photography is known, the more likely it is that you will get published, and eventually you may even get commissioned for specific features or images. This can also help you achieve the most

prestigious (and sometimes lucrative) position for one of your photographs: on the cover of the magazine.

Along with simply getting published and paid for your work, getting your images printed is also a great way to advertise your photography to a wider audience. This can lead to getting commissions for other publications, or other commercial work, depending on your personal style and subject matter.

## HOW MUCH TIME WILL IT TAKE?

Getting your images and submissions ready to enter a competition or send to a magazine can easily be done in an evening or two. There may be some additional time needed to add any detail needed for a magazine article or send in high-resolution images if your images are selected for either. But as long as you have organised your images so that you know where to find this information and the high-resolution images, it won't take you very long.

It's also worth understanding that you won't get paid immediately. Most publications work on standard terms that can be up to three months

after publication, and you will also often have to sign a rights agreement that states how and where your images can be used.



## HOW MUCH MONEY CAN YOU MAKE?

Don't expect to get rich quickly! The rewards for sections such as reader galleries vary quite substantially. Some, such as the 'Over to you' section in *N-Photo*, pay cash, while others offer a prize such as a camera bag.

When it comes to images used in the rest of the magazine, the amounts paid can vary substantially depending on the circulation of the publication. As a rough guide, for a single-page image you could expect to get £50 to £200 (\$75 to \$300), while for a cover you could make between £200 and £400 (\$300 to \$600), depending on publications and their budgets. ■

## DOS AND DON'TS OF SUBMITTING TO MAGAZINES

### DO

- Research the type of shots used in the magazine
- Send a small selection of images initially, and only send your very best work
- Remember to include your current contact details, both in the email and in the metadata of your images

### DON'T

- Expect an immediate response after submitting your shots
- Send in any photographs that are too similar to images that have already appeared in the magazine
- Send seasonal shots too late; they need to be there at least a couple of months before they will be published



There's nothing like having your shot appear on the cover of a magazine – and it's often the most lucrative position too. Just bear in mind cover shots need space for words





If you've got a collection of really top-quality photos sitting around already, why not make it start earning its keep as stock?



## MAKE CASH WITH YOUR NIKON

### 02 SELL THROUGH STOCK LIBRARIES

*Nikon pro Chris Rutter explores how you can make money from great photos you've already taken*

There are many professional photographers who will tell you that stock photography is dead, but that's not really the case. The market for stock photography has changed dramatically over recent years, though.

In the 'good old days' you could get good returns from a few images, but with the proliferation of images and low-cost 'microstock' sites, nowadays the returns per sale of individual images can be extremely low. This means that making an income

from stock is now mostly about getting many lower-return sales, rather than a few bigger ones. Don't let that put you off, though – if you're determined, you can do it, and we're going to show you how with our step-by-step guide...



Keywording is vital if buyers are to find your images. For travel shots, for example, make sure you include the location – and that you spell the place name correctly!

### DO YOUR RESEARCH

There are many stock libraries that could sell your images, so you need to do some research to find the right one for you. You should check that the library wants the type of images that you can supply, and then make sure that your images will meet their guidelines. Most of the larger libraries will then require you to register, and submit a small number of images for approval. This process is critical, so make sure that you only submit your

very best images. Once these have been accepted you will be able to upload more, although some libraries still have a limit of the number you can submit per week or month.

Once you have started to upload your images to the site your work doesn't stop, though. The first thing you need to do with some sites is to decide on how your images will be sold. There are two main ways that libraries sell images (known as licensing), which can affect how much money you will get for the images. These are



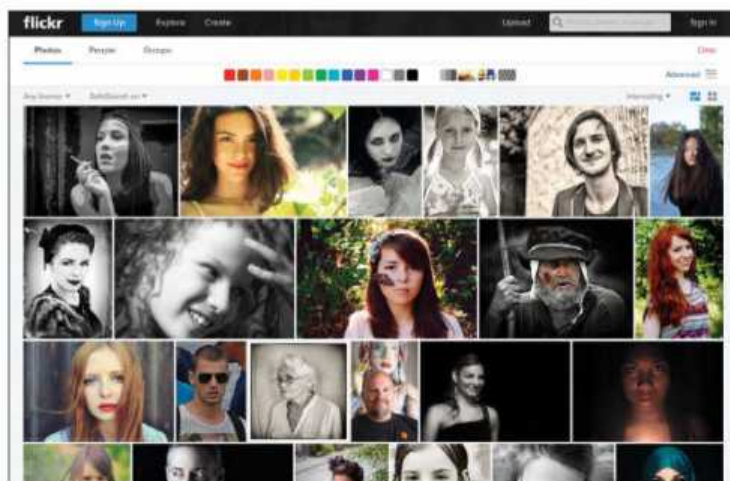


The level of image manipulation that's permitted varies, so check how much is acceptable before you submit your shots

royalty-free (RF) and rights-managed (RM).

With royalty-free licensing, the buyer pays a single fee which allows them to use the image multiple times and for any length of time, but the image is still available to other buyers to use. Rights-managed gives the buyer exclusive use of the image for a limited time and number of uses. What this means for you is that a royalty-free image will bring you less money per sale, but has the potential to be sold many more times, while a rights-managed image will command a higher price per sale, but potentially fewer sales. So you need to choose a library that offers the type of licensing agreement that suits your images. Most image libraries now use the royalty-free licensing model, particularly those known as microstock, as it lets them sell more images more cheaply than the rights-managed licence.

You then need to get busy with the task of keywording your images. This may seem like a waste of time, but it's the main way that buyers will find your images among the millions



It's important to submit photographs that stand out as thumbnails as well as full size, so a buyer will pick them out from a screen full of options when searching

available on many sites. So, do some research about which words image buyers are likely to use, and add the relevant ones to your photos. Finally, it's best to keep adding shots regularly, so look at uploading at least five or 10 images per week for quite some time to give you the best chance of making some cash.

## WHAT TO SUBMIT

The simple answer to this is to submit only your very best

images, both technically and aesthetically, but there's more to successful stock photography than this. When considering what type of images to submit to stock libraries you need to bear in mind that the shots that appeal to other photographers, friends or even users of online sharing sites like Flickr aren't necessarily what image buyers are looking for.

One of the most popular uses for stock photography is to illustrate articles, books or websites that are trying to get across some concept or meaning. Because of this, for your images to sell well they need to be more than just a good photo. Take a look at any



## GOING PRO: PART 2

Photographer Graham Parker is sharing what he's been up to on his journey to turning pro. This time, he gets his studio sorted

Once I'd got enough studio kit to set up a studio, there was one thing left to sort... yes, the studio itself!

I considered various locations for the studio, including retail high street, industrial estates, business parks and even my shed! Most of the units were either very expensive or required signing up to a lease of ten years or more. Then I found a perfectly sized unit in a workspace hub made up of creatives and independent professionals. It was out of my price range, but after some negotiating I was able to secure it for a short term.

Setting up the studio was easy. Put white vinyl at one end, set up lights, test them – and I was off. Yes, it was that simple, though if I had more lights it would have taken longer. My first set-up was for pets as I have two models – one willing and one not so willing – who are always available!

With the studio set up it was time to get customers. I decided to do a charity photo shoot. My idea was to charge a small sitting fee, to cover printing and postage costs, for each pet, and to ask the owners to bring a 15kg bag of dog food that I would deliver to the local dogs' home. In my adverts I specified 15kg and the type of food (requested by the dogs' home) so that everyone knew from the outset how much it would cost. I was donating my time, and giving a 12x8 print to the owners of each pet. Pet Planet, a local independent pet shop, helped out by selling the pet food at a discounted rate to all the people who were taking part. On the day, with help from a friend I photographed 23 dogs – and one rat. The most difficult part was finding a place to store just over a ton of dog food! Everything went smoothly and I got some fantastic shots, which you can see at [www.grahamparker.com/blog/](http://www.grahamparker.com/blog/)



**“Bear in mind that the shots that appeal to other photographers, friends or even users of sites like Flickr aren't necessarily what image buyers are looking for”**





An image that can be applied to a range of stories or situations will sell better than one that is very specific – and remember to avoid subjects with logos on them

stock site and they are full of images of models striking various poses, laughing, crying or even in a specific situation that can be easily categorised such as a business meeting or phone call.

This focus on easily-identified subjects isn't restricted to portraits; try to shoot images that can be used to illustrate specific themes such as waste or energy or even dereliction, as having this extra element will help you add successful keywords and sell more images.

There are also many small details that can help you make your images more appealing to both stock libraries and buyers. For some uses it's important to avoid any logos or trademarks being visible in the image. For example, if a buyer from a retailer or manufacturer is looking for an image to use, the last thing they want is for a logo of a competitor to be visible in the image.

You need to make sure that the image looks great as a thumbnail as well as at full size. This may not seem obvious, but a simple, graphic image often works better as a thumbnail, rather than a complex and very detailed one. This matters because most buyers will be searching through hundreds or thousands of thumbnails searching for the right image,

and your image needs to stand out as a thumbnail for them to even click on it.

## CHECK THE SMALL PRINT

One of the most important things to check when choosing a stock library is what percentage of each sale you will get. The amount you receive can be as low as 15 per cent for some sites, rising to around 50 per cent for others. The higher the percentage is obviously better for you, but it's not always as simple as the numbers may suggest. Some libraries offer better rates the longer you stay with them, or the more images that you have, and some also offer different rates for different licences. You may also be able to increase your cut by signing an exclusivity agreement. This means that you won't offer these images through any other agency, but this may limit your returns long-term.

## A QUESTION OF RELEASE

While it's not essential for every stock image, most agencies insist that you have a signed model release form for any people that are recognisable in your images. This release essentially means that the person in the

**“Making a living from stock photography is possible, but requires plenty of time, effort and dedication and really understanding the requirements of image buyers”**

## IN THE KNOW PAUL FOSTER, SENIOR DIRECTOR, CREATIVE CONTENT, GETTY IMAGES

■ “For amateur photographers wanting to take their imagery to the next level there are some key points to bear in mind. First consider what you want to convey with the image, what emotion or idea you want to evoke and how you can communicate this visually. We receive a lot of photographs on every conceivable subject and so you should be your own harshest critic when judging your originality. Challenge yourself to find a novel angle or unexpected point of view; perhaps experiment by using a wider lens to get up close and personal and give a greater sense of intimacy. Remember the power of clean, simple composition; sometimes the most powerful images work because of what is left out of the frame, rather than what is included in it.”

Having worked as an art director for eight years, Paul has won numerous awards from the likes of the Art Directors Club of New York, Communication Arts and Photo District News (PDN).





image acknowledges that the photographs can be sold, although there are still certain restrictions concerning exactly where they are used such as for advertising certain products. It's also advisable to obtain a similar property release form if an image you're selling was shot from private property or it contains any recognisable buildings or structures.

Some stock libraries will accept images without signed releases (especially for property) as the pictures can still be used for editorial use, but it will mean that the image is less likely to be sold as easily, and you may not make as much cash from it.

## THE LONG HAUL

Stock photography is best seen as a long-term investment rather than a get-rich-quick scheme. The chances are that you won't get much money for the first few months, but it's still worth persevering. Make sure that your images are of the best quality and are of subjects that buyers want. Keep uploading new images and you can make some significant cash. Making a



If you're selling an image of a common or popular subject, it's got to be top-notch to stand out from a crowd of similar shots

living from stock photography is possible, but requires plenty of time, effort and dedication, and really understanding the requirements of image buyers.

While it could only take a weekend to submit your first images, once you have started you'll need to set aside around one evening per week to upload new images and keyword them. You will also need to be shooting new images to keep your submissions new and fresh. You may already

be shooting new images every week or two, but if you are shooting specifically for stock this can add another day or two to your photography schedule.

When you start submitting your photos to stock libraries the initial returns will be pretty small. With microstock sites you will typically get a few pence per image sale, so you need plenty of sales to make any significant cash. With rights-managed images you can make more per individual

sale, but the volume of sales will be much lower. So, if you only have a few images on a stock site you will be lucky to make a few pounds per month, especially with microstock sites. The returns can become significant once you have a good selection of hundreds or even thousands of high-quality, saleable images uploaded. ■

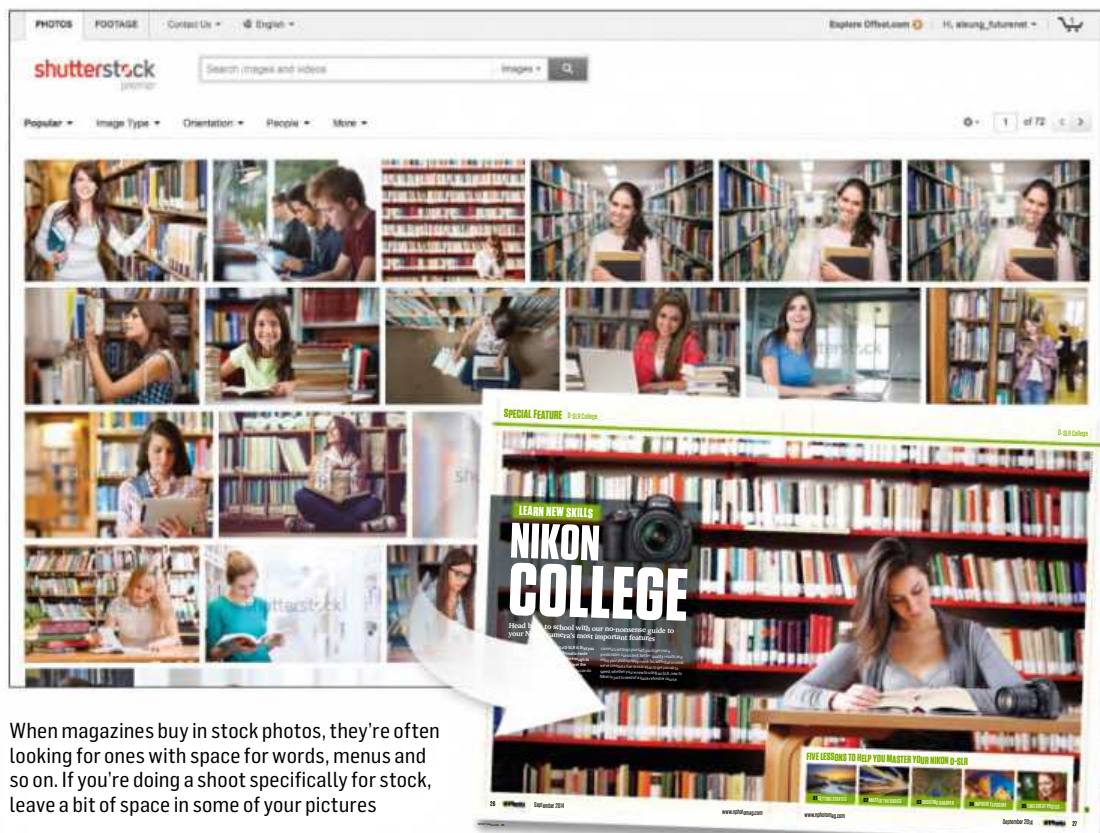
## DOS AND DON'TS OF STOCK PHOTOGRAPHY

### DO

- Read all of the small print about submitting images, and make sure that your images meet *all* of the criteria.
- Spend plenty of time researching and keywording your images to make sure that they are what buyers are looking for and can be found easily.
- Check that every image that you submit is technically perfect. They need to be sharp, have low noise and be free of defects such as chromatic aberration.

### DON'T

- Expect to get huge amounts of cash when you start out. It will take months or even years to generate enough images to make significant amounts of money.
- Expect every image to be accepted, particularly when you start out. It may be that the agency simply has too many similar images on its site already.
- Forget to get model and property release forms signed for as many images as possible. This will ensure that they are available to the maximum number of buyers.



When magazines buy in stock photos, they're often looking for ones with space for words, menus and so on. If you're doing a shoot specifically for stock, leave a bit of space in some of your pictures



Superb images of scenery will appeal strongly to tourists whose holiday snaps won't be as good as the prints you're selling



## MAKE CASH WITH YOUR NIKON

### 03 SELL PRINTS, CARDS, AND MORE

*Nikon pro Chris Rutter talks about the income to be had when you sell your images at markets and fairs*

Even in a digital and online age, there is still a huge market for traditional prints for people to hang on their walls. Pictures give a home a personal touch, an office a human feel.

Most people don't have the technology, or the know-how, to make great prints

from digital files and will still prefer to buy pictures for their walls ready-made, with or without frames. So, in Part 3, we'll take a look at how and where you can start selling prints of your images, what initial costs you're likely to face, and what eventual returns you can expect.



When you're selling your photos via a café or restaurant, be sure to choose images that are likely to appeal to the sort of customers the venue attracts

#### FINDING A MARKET

There are several options when it comes to finding places to sell your prints. A popular one is to approach shops and cafés, offering your prints on a consignment basis. This is an agreement where you provide the prints to hang in the shop, and then split the money when the item sells. The split of the selling price can be anywhere between 70/30 (where you keep 70 per cent and the shop takes 30 per cent) and 50/50.

When considering this approach you need to choose the right venue for your work. Look for places where there are plenty of people who are likely to buy prints. Tourist areas are a good place to start as they often have a steady flow of people passing through. Make sure that the venue has decent lighting and space to display your prints, as you don't want them to just be stuck in a dark corner of the shop or café.

Once you have come to an agreement with the venue, it's





People buying prints are most likely to be looking for art for their homes or workplace, so don't be afraid to market your more creative images

vital that you have a contract written up before handing over any of your prints. Along with the commissions and percentage split of the selling price, this should include full contact details for both parties, a list of the prints and selling prices, how long the contract will last, how and when payment is due after a sale, and details of who is responsible for insuring the items while they are at the shop.

## FINDING A MARKET

Along with shops and cafés, galleries can be great places to sell your prints on the high street. It's worth doing a bit of research when looking at which galleries to approach to check whether your images and subject matter are suitable for a particular venue. But while some galleries specialise in a particular media or style, many

will be on the look-out for something that complements the work they already have, rather than displaying all the same type of art.

When you approach a gallery, start by arranging a meeting with the manager or owner, and take along a selection of around 10 images. These can be on a computer or laptop, as they're just to give them an idea of the type of images you are producing; there's no need to get them printed at this stage. This approach will mean that you can get an idea of which images the gallery manager thinks are saleable. Many galleries will also be able to help with framing.

Along with researching the suitability of the gallery, you should check what the gallery's

## DOS AND DON'TS OF MAKING AND SELLING PRINTS

### DO

- Make some test prints at home to check sharpness, contrast and image quality, even if you are having your images printed commercially.

- Make sure that your contact details are included on the back of the print, so that people can contact you if they or their friends would like other prints.

- Have a good range of print sizes available, as not everyone has the space for huge prints on their walls.

### DON'T

- Use very ornate or colourful frames for most of your images, as this will limit the market to those who like this type of frame.

- Try to print your images too large. To ensure the highest quality prints make sure that the image resolution is at least 300dpi at the print size that you want to make.

- Forget to calibrate your monitor, or to use the correct colour profile for the printer and paper that you will be using.

terms and conditions are for displaying and selling your work. Some will require you to pay a monthly fee to 'rent' the wall space, although this varies with different galleries. Then you will also have to pay a commission and/or a percentage of the total selling price to the gallery. The fees and amounts charged by the gallery will vary greatly between different venues, so make sure that you will still be making a profit on each piece once they have taken their cut.

If you want to have complete control over the sales and marketing of your prints, without the cost of setting up your own shop or gallery, selling at art/craft fairs might be the perfect answer. Although this is option is cheaper than a shop you'll still need to factor in the fee charged by the organiser of the fair and the cost of getting you and your prints to the event. You will

**“If you want to have complete control over the sales and marketing of your prints, without the cost of setting up your own shop, selling at art/craft fairs might be the answer”**



## GOING PRO: PART 3

This time Graham Parker's been looking at ways to generate free publicity

Marketing for a new business is very important, but it can cost a fortune. Some firms set aside a marketing budget, but the majority of small 'one-man-band' start-ups probably don't. I am in the latter category.

To market my new studio, I've been using as many free ways to get my name out there as possible. I believe that word of mouth for me is by far the best way to build my studio's reputation. I always have business cards handy, and I attend free events, offering my time and low-res photos for free to the organisers for their websites. Even if the opportunities are limited, as long as I pick the right places the opportunities will come. I also brand myself, wearing my company on my sleeve... literally! Okay, a branded T-shirt isn't free to most people, but for me it is as I have a relation who can help.

There are also a lot of things on the internet that you can do for no extra cost. I started with an easy one, claiming my online listings at sites such as Google My Business. One important exercise is to tag all your photos that go to the internet. This can be done very easily in-camera. Via my Nikon's Setup menu, I have added my email, website, name and copyright to the EXIF so it appears on every shot I take. Blogging and social media also help bring you to the attention of potential customers. If you do start a blog, you need to keep going, and also comment on others' blogs. This sounds like a lot of work, but it needn't be: I have connected my website with Facebook and Twitter so that I only have to post in one and it automatically goes to the others.

There are many other ways to market yourself, but when you're running a small business there comes a point where there isn't enough time in the day to do everything. It's better to do a few very well than a lot badly!







Don't crop unframed prints to odd ratios – many people will want to buy ready-made frames in standard sizes

need a way of displaying your wares, too, such as a table and display stands. This option can take a lot more of your time than simply displaying your images in a shop or café, as you'll need to be there to set up the stall, sell the prints and pack away at the end of the day.

## ONLY THE BEST

When picking which images you are going to print, mount and frame, make sure that you only choose your best (and most saleable) shots. Ask yourself whether you would want it on your wall, and get the opinions of friends and family (especially non-photographers) to help you choose. Often photographers can be too concerned with the technicalities or style of the image, or even whether it's an image that they would have liked to have taken themselves, whereas someone who isn't into photography (and this will be a large number of your potential customers) will be able to judge an image solely on its merits.

Whether you are selling a postcard on a market stall or



If you're going to be printing your pictures yourself, you'll need a top-notch printer

a framed print in a high street gallery, you want to make sure that your work is printed and presented to the highest possible standard. So, first of all, don't be tempted to skimp on the printing.

If you are thinking of printing your own images you'll need a high-quality inkjet printer. The best models use pigment-based inks for better longevity than dye-based versions, and also have a gloss optimiser option for the best results when using glossy papers. You'll get more consistent and reliable print results by calibrating your screen using a device such as the Datacolor Spyder.

The alternative is to have prints made by a commercial laboratory. This doesn't offer the same control as you have when printing at home, and

**“Not everyone is willing or able to buy a huge framed print, so as well as framed prints, try having some smaller mounted prints, postcards or even calendars on offer”**

## I DID IT! ED COLLACOTT, SUCCESSFUL FINE ART PRINT, BOOK AND CALENDAR PHOTOGRAPHER

■ “I have been very fortunate over the last 25 years to have been able to make a good living from what has always been a deep passion of mine: our landscape. I sell my work from a stall in the centre of Bath, and online – mainly fine art prints, but also greetings cards and a book. Also each year I produce a large-format panoramic calendar of British landscapes which continues to be very popular.

To be successful you have to know your market. If your art is conceptual or has an intellectual base then art galleries are the answer. In my case I sell to the general public so it has to be accessible; people have to be able to connect with it. The most successful images are those that create atmosphere, a sense of place and have a depth and character that lifts it above the ordinary – it's a very competitive market, so make sure your images stand out. A common mistake is to show too many images. That's fine if they are all outstanding, but any weak ones will dilute the overall impression. Another mistake is poor presentation. Use the finest materials to help build your reputation... reputation is very important. Too often I've seen masking tape being used to hang and seal photos – not good, and it looks cheap!

Pricing is never easy when starting out, but don't undersell – just be realistic. A good starting point is the cost of materials plus at least 100 per cent. Just think how much time and effort has gone into each image.” You can see Ed's landscape images at [www.fineartphotographs.co.uk](http://www.fineartphotographs.co.uk)





you may have to wait a few days for the prints, but if you are just starting out and need a selection of prints made, it will be cheaper than buying a printer and paper.

Once you have made your prints you need to mount and frame them. Again, this area can be crucial to successful sales, so you need to think about it carefully. The choice will be a personal one, but to maximise the appeal of your images it's generally best to avoid ornate or colourful frames, as these will only appeal to a small percentage of buyers. It's much better to use simple, plain frames, and also to have a selection of mounted but unframed prints to offer, so that the buyer can always choose a more personal frame if they want.

## PRICING YOUR WORK

The first thing to consider when pricing your work is the basic cost of producing each print. This will include printing costs, mounting, framing and any postage or transport costs you need to pay. Once you have worked out your costs, you need to factor in how much profit you expect to make.

This will give you a starting point to price your work, but there are some other factors to take into consideration. If you are selling through a third-party such as a shop or gallery, then they will take a percentage of the selling price. Then there's

the final factor, which is how much people are willing to pay. This is the most difficult part of the equation, so it's worth spending some time looking around at other shops, stalls or galleries to get an idea of what they are charging. The prices can vary immensely, depending on the type of people that are visiting the area, the type of work you are selling and also the overheads of the business. A business based in a high street in a popular and affluent tourist location will often have work priced much higher than one which is in a less popular part of town, just to cover the extra costs. So, take into account where your work is being sold when deciding on the final price.

Wherever you are selling your work, it's worth looking at having a range of different sizes, prices and types of work that you're offering. Not everyone is willing or able to buy a huge framed print (especially if they are on holiday), so as well as framed prints, try having some smaller mounted prints, postcards or even calendars on offer for these customers.

## HOW LONG WILL IT TAKE?

Producing, framing and selling prints is going to take some time and incur more upfront costs than many other ways to make money from your Nikon, but that doesn't mean that it's not a good idea. Getting your



If your work is strongly conceptual or challenging, an art gallery might be the best venue for selling your prints

initial prints made, mounted and framed will take a couple of weeks. Then you'll need around six months to start recouping your costs by selling the prints through the various outlets. Art/craft fairs often result in the quickest sales, as they tend to attract large amounts of people looking to buy art or photography, while selling through cafes and shops can take longer, as a lot of their customers won't be in the market to buy prints. But as long as you're prepared for the long haul, by building up relationships with different outlets and customers it's possible to make print sales through these outlets a viable money maker.

## WHAT CAN YOU EARN?

This will be dictated by your profit per item, and the volume of sales. The profit on a small print, postcard or calendar is often very small, so you will need to sell tens or even hundreds of them to make it viable. While the profit on a large framed print can be much greater, you are much less likely to sell large numbers of these.

If you are just starting out you will be doing well if you make a few hundred pounds' profit in the first six months. But selling prints is a business that can be grown gradually, and in time it's possible to make a good income from a wide range of sources. ■



Thinking of selling your photos via a fair or even a street stall? The images you choose will need to be instantly accessible, to grab the attention of passers-by





## MAKE CASH WITH YOUR NIKON

### 04 SHOOT PORTRAITS PART-TIME

*Portraits are a great way to earn money from your Nikon photography – Chris Rutter helps you get started*

**If you enjoy shooting subjects that talk back, maybe it's time you started making cash from your portraits.** You don't need much equipment if you start by taking outdoor portraits in natural light. Any Nikon D-SLR will be up to the job, although the higher resolution of the latest models will give you the option of producing larger prints than some of the older models.

You also need to think about your lenses. While a kit lens can produce great results,

a wider-aperture standard zoom, such as the 17-55mm f/2.8, will allow you to achieve shallower depth of field than the f/5.6 maximum aperture at the longest end of most standard zooms. The other lens that's worth investing in is a 50mm f/1.8, as this will give you even narrower depth of field and allow you to shoot in low light without having to increase the ISO.

Stepping up to full frame, any Nikon is capable of professional results with

the right lens. Again, the high-resolution models will give the option of huge prints, but even shots from an older camera such as the D700 will print up to A3. When it comes to lenses the 50mm is a good starting point, but the focal length is a little too short for head-and-shoulders shots. An 85mm f/1.8 gives more flattering results, or if you can live with the smaller maximum aperture, a 24-70mm f/2.8 or 70-200mm f/2.8 are versatile (if pricey) options.

### PEOPLE SKILLS

Along with your photographic skills, taking successful portraits relies on your ability to get the best from the people you are shooting. There are many ways to do this, from cracking jokes to simply chatting with the subject to find out what their interests are. But the key skill is being

able to put subjects at ease at the same time as you are shooting amazing images. This means that you need to be completely confident in your photographic technique, so you can concentrate on the person and not have to think about your composition or settings.

This ability comes naturally to some, but if your people skills don't quite match your

photographic ones then you'll need to spend plenty of time practising this on any willing subjects (try friends or family) if you're going to make it as a portrait photographer.

Getting the best out of your subject is only one part of your job, though. If you are going it alone as a portrait photographer you'll also need to be able to sell yourself and

**“You need to be completely confident in your photographic technique, so you can concentrate on the person and not have to think about your settings”**





You don't need masses of kit if you're shooting outside with available light

your services before you can get the work and, depending on your business model, you may also need to sell the prints to the customer after the shoot in order to make money.

## FIND A STYLE

From using available light and wide apertures to give a soft, dream-like appearance, to under-exposing the background and using off-camera flash to light the subject for a harsher, high-contrast look, the style of your images will have a huge influence on the success or failure of your business. Take a look at the images by many successful portrait photographers and you'll notice that they will often have a particular style of shooting that is immediately recognisable. This recognisable style helps

## I DID IT! KATE HOPEWELL-SMITH

■ I cut my photographic teeth taking pictures of my own children, then my friends' children. I was asked to shoot a wedding and finally I listened to those close to me and decided to set up my own business. There has never been any doubt about my speciality, my photographic passion – and that is photographing people. And I'm convinced you can only do this successfully if you enjoy making connections and building relationships. It matters to me. I want to give you something individual and personal by taking the time to know you a little. I studied History of Art at degree level and now when people describe my work as 'artistic' I couldn't be happier.

One of the UK's top portrait, wedding and boudoir photographers, Kate Hopewell-Smith is also a Nikon Ambassador and on the panel of the Guild of Photographers. You can find out more about Kate's beautiful images, along with her training and mentoring, on her website at [www.katehopewellsmith.com](http://www.katehopewellsmith.com)



them attract clients who want that 'look', and also makes their images stand out from those of other portrait photographers. So look at your images and see if they share any particular style or technique, and try to make this a feature of your portfolio and business.

Identifying your style of portrait photography will also help you market and promote your services to the right type of customer. The light, informal look of shooting into the light and using flare, for example,

won't suit a customer looking for a more serious, business-style portrait, while the strong look of overpowering daylight with off-camera flash won't appeal to many families or those looking for a brighter, lighter portrait to put on their wall at home.

## MARKETING MATTERS

You've got the photography skills, and you're great at getting the best from your models, but these alone won't turn your portrait photography into a business if nobody knows about you. So you'll also need to spend plenty of time promoting and marketing your services to make it successful. You can start by word of mouth, as even in this digital age there's nothing like a personal recommendation to help get you clients. Then there are the traditional marketing tools such as business cards and leaflets. Although these aren't as essential as they used to be it's still worth having some made, particularly cards, as they are a



## GOING PRO: PART 4

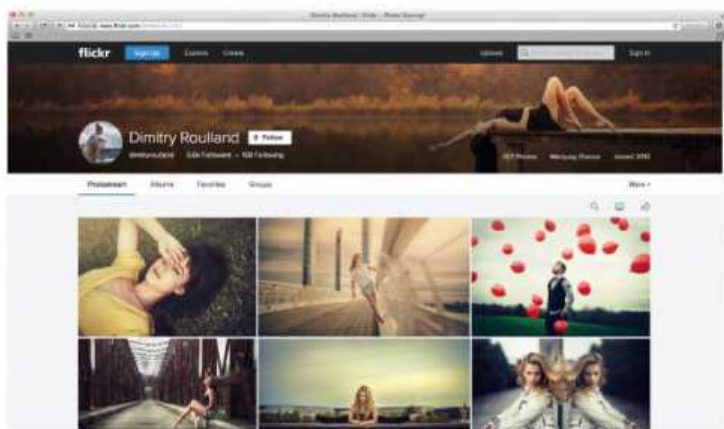
Photographer Graham Parker is sharing what he's been up to on his journey to turning pro. This time, he's been busy...

People love getting photos of something they're passionate about. While searching on Google I came across a photographer who was looking for more people to work for him covering the Southwest, mainly photographing triathlon events. I shot off an email and got a quick reply. After a couple of phone calls finding out exactly what the gig was all about and having my web site checked out, I was offered a couple of jobs.

All went well, and over the Saturday and Bank Holiday Monday I must have taken over 2000 shots. 'Spray and pray!' I hear you shout... Well, it wasn't quite that, but it was leaning that way. However, 70 per cent of all shots taken were used and put up on the event's selling page.

And who says Facebook doesn't pay the bills? Around the same time as I started shooting triathlons I was contacted by a dog photography company via my Pet Photographer Facebook page. They asked if I would be willing to shoot for them at some events they had planned. They had looked at my website and the studio shots of dogs on a white background was exactly what they were looking for. The money they were offering was quite good and I felt it was worth a go. This job would require some investment – I needed a Lastolite HiLite 8x7 background as I would be required to set up a studio in pet shops! I needed to get at least six good shots of each dog in six different poses. That's more difficult than it sounds, but I like working with dogs and got the shots – the first one, which went very well, involved 33 dogs and just over 800 shots. And the Lastolite HiLite is worth its weight in gold!

So, if you want to find work, it seems – just ask!



Take promoting yourself online seriously – when people can see how good your photographs are, they'll know that a session with you will be worth the asking price

great way of getting your name and details into the hands of potential customers.

These traditional methods can work well, but they will work much better if they are backed up with a professional-looking website and presence on social media. When it comes to using social media such as Facebook or Twitter, if you already have a personal account then it's possible to use this. But if this account is full

of unprofessional images and comments you'll need to set up separate accounts specifically for your business.

## PET PHOTOGRAPHY

Along with traditional portrait photography, there's also a growing market for pet portraits. Along with a love for photographing animals and pets, you'll also need similar people skills to shooting normal

portraits when dealing with the owner of the pet. This can often take a lot of patience, as you'll have to be ready to deal with both a potentially unwilling subject and their owner!

## HOW TO CHARGE

There are two typical business models for charging for portrait shoots. You can either charge a set rate for the sitting, which will include a set number

of prints and digital files depending on how long it will take, or you can charge a small (or zero) fee for the sitting and then charge extra for prints or digital files afterwards.

The single-fee model is best for those who like a consistent income from each portrait shoot. You'll know beforehand how much money you will make, approximately how much time it will take, and don't have to spend as much time 'selling' the prints to the client afterwards. You should have an agreement with the client about how many prints or digital images they would get for this fee, with an option to buy more on top of the basic fee. This approach is much simpler if you're more interested in photography than selling, particularly if you are a 'one-man band'.

The lower (or zero) fee plus charging for prints option is ideal if you are prepared to do a bit more selling to your customers. With this approach you'll need to be confident of selling enough prints to make up the value of the time that you take for the shoot and any post-production. Not having to pay up front will appeal to many potential customers, so it's a good way to get this



Pets don't know how to pose for photographs, making them rather trickier subjects to photograph than people!

## IN THE KNOW TAKE BETTER PORTRAITS

■ Here are Jersey-based professional portrait and wedding photographer Colin Cruickshank's top tips on getting better portraits.

- 1 Use a long focal length as the compression effect is more flattering. A 75-300mm at the long end is perfect.
- 2 Use aperture-priority mode (A on your camera) as a shallow depth of field (low f-number) will isolate your subject from the background and give your shots more impact.
- 3 For more dramatic full-length shots when using a long focal length, shoot from a low viewpoint (in other words, lie on the ground).
- 4 Avoid shooting in midday sun as the overhead light is unflattering and also causes dark eyes.
- 5 For the very best results, shoot on an overcast day (but avoid getting the sky in the shot) or during the golden hour, just before sunset, when the light is softer and warmer.
- 6 Your subject will stand out against a background that contrasts with their skin tone (pale subject/dark background, dark subject/pale background). Also, avoid distractions such as branches or signs in the frame.
- 7 Focus on the closest eye to the camera.
- 8 Don't ask the subject to smile; make them smile by saying something funny and you will capture their true personality.

To see more of Colin's fantastic images, go to his website, [www.ccpimages.co.uk](http://www.ccpimages.co.uk), where you'll also find information about his portraits and lighting workshops, along with workshops on low-light photography and post-processing in Lightroom and Photoshop.





If you're building your portfolio, it's worth seeing if a model will trade time for shots – you get experience, they get good images



type of client. But this can be time-consuming and not every photographer is happy with this more 'high street' approach to selling their images and time.

## HOW MUCH TIME WILL IT ALL TAKE?

Setting up the initial elements of a portrait photography business will only take a few weeks in your spare time, but building it up to become genuinely successful

and profitable will take much longer. It will usually take anywhere between six months and a year to get all of the elements in place to get regular bookings and for your marketing to have time to reach a good range of people.

Once you start taking bookings, most portrait shoots will take between two and four hours, plus travelling time if you go to them rather than having your own studio. On top of the shoot you'll also need to factor in around the same time

to sort through and process the images, and then finally some time to produce prints and package them. So, remember to take this extra time into account when you decide on your pricing structure, as for a simple two-hour shoot you could end up working for half a day or more.

## HOW MUCH MONEY CAN YOU MAKE?

The prices charged for portrait photography can vary hugely, so you will need to assess your market, skills and expectations when deciding on a reasonable rate. If you are charging for your time, rather than just the prints, then you should be able to charge around £100 to £150 for a half-day at the lower end of the market. If you target higher-end customers then you'll be able to charge more like £200 and upwards for a half-day rate.

There's a similar range of prices when it comes to charging for prints, rather than a higher up-front fee.

## DOS AND DON'TS OF PAID PORTRAIT PHOTOGRAPHY

### DO

- Practise your skills on friends and family, as the less you need to think about the mechanics of shooting portraits, the more you can interact with your subject.
- Think about your style of photography, and who this will appeal to, particularly when it comes to promoting and marketing your work.
- Get insurance for both your gear and public liability if you are shooting portraits, particularly if you are shooting in public areas.

### DON'T

- Underestimate the time it will take to edit your pictures, and take this into account when deciding how much to charge.
- Expect to get loads of bookings immediately, as it can take time for customers to hear about you.
- Forget that you will need to declare any earnings, and pay the relevant taxes.

To cover your costs you should be looking at making at least 100 per cent on top of the costs, so for a high quality 10x8-inch print you could charge between £40 and £60. ■



Work out what your style and specialism is – are you great with children? Or perhaps more formal photos for business use will be your forte?

Once you've got a small collection of nice images, it only takes an hour or two to set up an online portfolio



## MAKE CASH WITH YOUR NIKON

### 05 SET UP AN ONLINE PORTFOLIO

*Having a presence online is essential for promoting your work. Here, Chris Rutter explores the various options available*

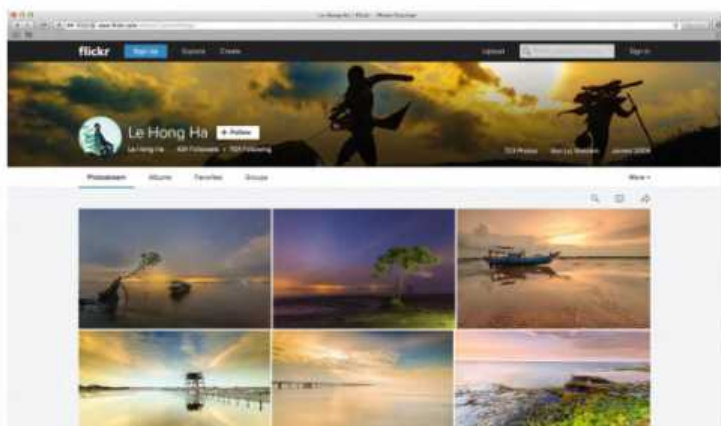
**Getting your images online is the best way to get your work noticed, gain new clients and even sell prints to customers that you could never reach in any other way.** The internet gives you the chance to showcase your work in a way that's accessible to people around the

world, not just on your doorstep, and even to be found by magazines and professional picture editors.

Of course, the web can be a big, confusing place where it's hard to get noticed amid the sea of images already available, and you might also be worried

about the possibility of image theft if you display your best shots publicly.

So, in this instalment we take a look at how to get your shots online, how to protect them, and how to get people to find them using everything from a personal website to social networking.



Don't forget to include some way to be contacted via your website or portfolio page – we've found several of our cover photographers via sites such as Flickr and 500px

### PHOTO-SHARING SITES

If you want to get your images online without the hassle and expense of setting up your own website, then the simplest way is to use a photo-sharing site such as Flickr, 500px or Pinterest. These offer a great way to get your images on the web, and are usually free to use. They are particularly good if you are prepared to put in some time and effort to join groups and communities on the site, which will help gain

your images more views and exposure. They are also perfect for linking to social media such as Facebook or Twitter, which can also help improve the exposure of your images to as many people as possible.

### WEBSITE OPTIONS

While photo-sharing websites are great for getting your images online, having your own website can be a more versatile and productive way of selling your images and services,





If you're setting up your website to promote your photography, stick to the subject, and don't be tempted to shoehorn your other hobbies or interests into it

and can also look much more professional. There are several ways of producing a website, from building it yourself to using one of the many all-in-one photography website providers such as Klikpic, Smugmug, Zenfolio or Photium.

If you are 'tech-savvy' and want a bespoke site, then it's not difficult to build your own website. To start with, you'll need a web hosting service, along with a domain name, which you may need to buy and register separately, although often this can be done through

the web hosting company.

Once you have this set up you can start to build the actual site using a platform such as Wordpress or Joomla.

The all-in-one providers offer a simpler solution than building your own site as you don't have to design the site from scratch or worry about separate hosting, as this is part of the package. You can either use an existing domain name or purchase one through the website provider. Then all you need to do is select a template from their site, upload your

images and add a few words. This option may cost a little more than building your own site, and may not offer quite as many custom options, but it's much more convenient if you don't have the time, knowledge or interest in designing your own site.

Many of these providers also offer a bespoke service, where you can have a website built to your own design without having to do it yourself. This option costs more than the others, but will give your website a unique appearance and design.

## BASIC DESIGN

Whether you build it yourself or use a template, you should generally try to keep the design and layout of your website simple, clean and uncluttered. If you are simply showcasing your images this is extremely important, as you don't want anything to take attention away from these, but being easy to navigate and clearly laid out is advantageous to any website.

An additional advantage of simplicity is that a streamlined design can also make your site easier to use on the smaller screens of phones and tablets, which is becoming more important as more and more



## GOING PRO: PART 5

Photographer Graham Parker is sharing what he's been up to on his journey to turning pro. This time, he's been mixing business with fun in Kenya...

Running your own business is a worry if the work isn't flooding in, but you need keep to going and stay positive. Every once in a while something fantastic happens.

A very good friend of mine, Chris, is also a photographer, and I have second-shot for him once at a wedding. He asked if I was interested in doing another one. Of course I said yes. It turned out the wedding was going to be in Kenya! That was 12 days, all expenses paid, covering one wedding, one engagement session and a family portrait session, so I'd also have lots of time to explore, and hopefully shoot some wildlife.

The trip was all go. The cathedral, where the wedding took place, was an amazing building and the light was fantastic. We got some great shots, even the formal ones (where it was like a rugby scrum for me, as I was hanging back looking after all the kit and trying to get some candid shots of the event). Then it was off to the reception, which was like no other reception I have ever been to!

The engagement session in the grounds of a beautiful hotel also went well. The couple felt a little awkward at first, but they soon relaxed and the images were great. The final job, the family portrait session, was also fun.

The rest of my time in Kenya was spent touring around national parks looking for animals. I also visited a giraffe sanctuary and an elephant orphanage. These creatures are amazing, and I was glad that I had some large-capacity SD cards with me!

I guess the lesson here is that while second-shooting for another pro may not sound that exciting, you never know where it might lead...



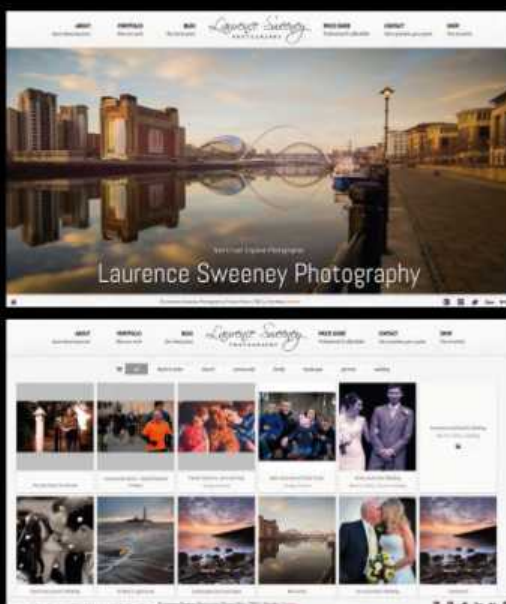
**“While photo-sharing websites are great for getting your images online, having your own website can be a more versatile and productive way of selling your services”**

## I DID IT! LAURENCE SWEENEY

■ *N-Photo* reader Laurence Sweeney started his photographic business almost one year ago. Here are his thoughts about, and experiences of, setting up a professional-looking website.

“Any potential client will expect a pro to have an attractive website displaying examples of their work and services. I undertook desktop research and read numerous magazines, including *N-Photo*. I also looked at the sites of other photographers. After purchasing my domain via a hosting provider, I chose the Wordpress platform and a photo theme. I thought that I would have the skills to build it myself but I soon realised that I would need support. I turned to Zealous Web Design, who made the site easily updatable and provided some flexibility in terms of future-proofing. It took about a month to get things up and running and I am still tweaking things – for example, I am now setting up a shop area for my landscape sales. I am very pleased with the outcome, and I continue to ensure that the site remains relevant and visually interesting. In retrospect I wish I had engaged with the web design company from the start.”

You can see more of Laurence's stunning photography at his great-looking website at: [www.laurencesweeneyphotography.com](http://www.laurencesweeneyphotography.com)



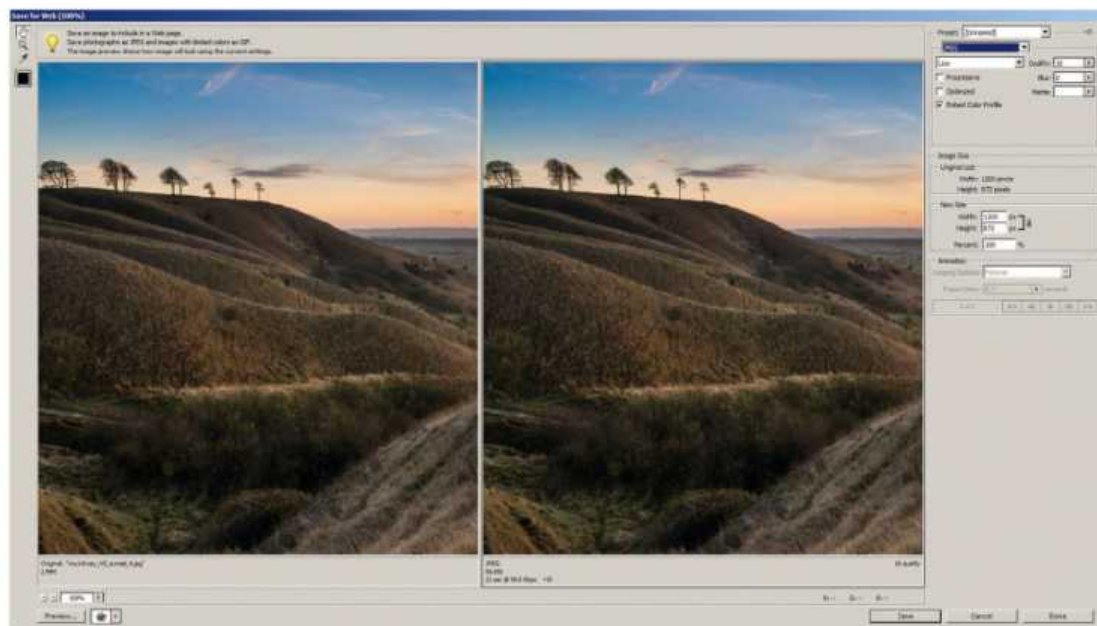
If you want something unique but feel your website design skills are lacking, a bespoke site could be your best option

people access the web on these devices. To boost this further, you should also look for templates and designs that are 'mobile friendly', which means that logos, text boxes, buttons and images are resized for these smaller screens.

Along with coming up with a design you're happy with, make sure that there is plenty of information about you and the photographic services that you offer. This is particularly important if you are trying to promote an offline photographic business, but even if you only want to sell prints online, people are much more likely to trust you enough to buy prints if they can find out some information about you and your photography.

## PREPARING YOUR IMAGES

With any photography website, the images are the key to its success, so you need to make sure that you resize, sharpen and save the ones you've chosen for your portfolio so that they look their best on screen. They also need to be small enough to load quickly on your site,



Photoshop's 'Save for web' option enables you to check the approximate download times of your image at various quality settings

because users aren't going to wait ages for photos to become visible. You can do this using the normal resizing and save options, but both Photoshop and Elements include a handy 'Save for web' option in the File menu, which allows you to preview the effects of the different sizing and JPEG compression options before you save the image. This can help

you to achieve the best balance between file size and image quality without having to guess at which settings to use through the normal save options.

## IMAGE THEFT

The theft of images online is an ever-present threat to the income and artistic integrity of photographers, so you should take some basic precautions to avoid your images being used without your permission by other sites. To help their traceability you should make sure that your name and contact information is in the copyright and data fields in the metadata of your images. You

should also add a watermark to your images, which includes your name or company name, to deter people from copying your images. These won't prevent people stealing your images if they are determined to, but these simple steps will make it less likely.

## GETTING FOUND ONLINE

There's no point having the best website in the world if nobody knows it's there, so getting your website found online is as important as the content and design of the site. You should start by promoting your website as much as possible, through friends, family and on social

## IN THE KNOW 10 TIPS FOR SETTING UP YOUR OWN SITE



■ Tim Hunt, Marketing Director for Klikpic, a leading provider of websites for photographers and artists, shares his ten top tips for setting-up your own website.

- 1 The clearer your marketing strategy is, the easier it is to get your website right.
- 2 In particular, be clear who your target market is, what you are

- offering, and how you differ from your competitors – then make sure your website reflects this in the split instant someone looks at it!
- 3 Likewise, be clear why you have a website in the first place.
- 4 Do some work on which phrases you think people will use when searching (Google has some excellent free tools) and include these on your website.
- 5 Have a clear call to action, such as a contact form or clearly signposted telephone number.
- 6 Keep it simple (especially the navigation) and let your photos do the talking.
- 7 Don't ramble on! Users will be put off by too much text.
- 8 Generally speaking, quality is better than quantity when showcasing your work.
- 9 Ask some trusted friends or contacts to look at your site and give you constructive feedback.
- 10 Finally, don't be put off by your lack of online skills!

You can find out more about the various website and design services available from Klikpic by visiting [www.klikpic.com](http://www.klikpic.com)



Image theft is something that worries a lot of photographers. Watermarking your photographs will make it immediately apparent who the copyright belongs to



## DOS AND DON'TS OF SETTING UP A PHOTO WEBSITE

### DO

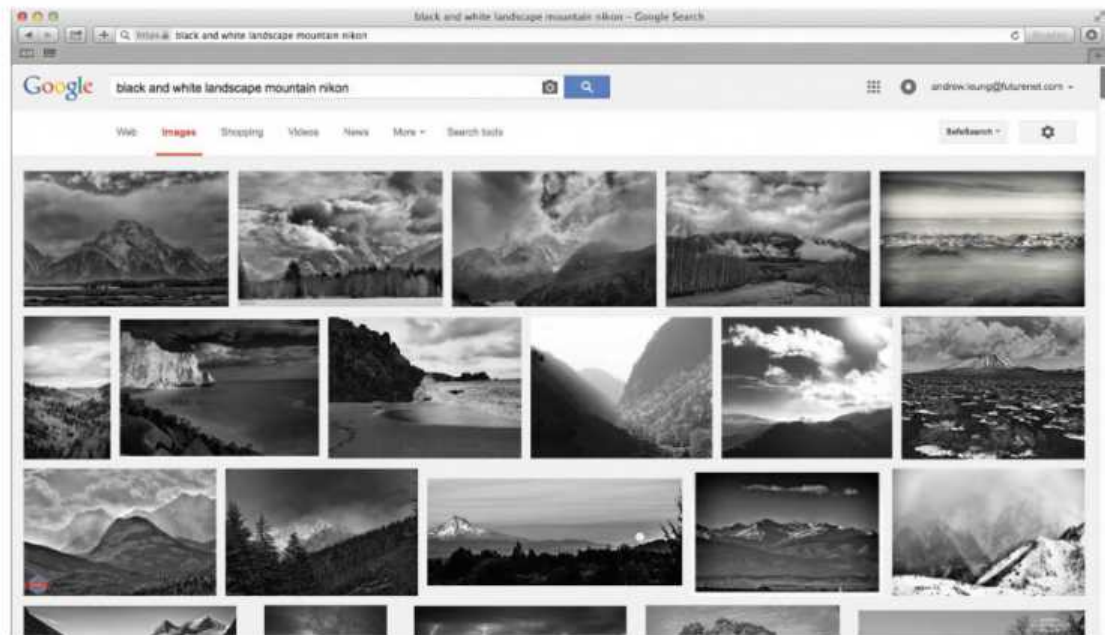
- Make sure you update your website with new images and other content regularly as this will help improve both the visitor experience and the SEO of the site.
- Try including a blog about your photography on the site, as this can also be a useful tool for helping your search rankings, but make sure you keep adding to it.
- Keep the site simple and clean, with clear links within the site to help visitors easily navigate their way around it.

### DON'T

- Try to put every single image and all of your content online at once. Once you have a reasonable amount of work online, it's much better to update the site gradually and regularly.
- Expect people to find your site without spending the time to keyword your images and include relevant text in headers and straplines.

media. This can help start driving traffic to your site, but for the website to really succeed you need it to be found among the millions of other sites on the web, which is where the world of search engine optimisation (or SEO) comes in. There are loads of books, guides and even companies offering to help with the SEO of websites, but before you start spending loads of cash on these you need to make sure that you have the basic elements in place to make your site as search-engine-friendly as possible.

For this, you need to put in place a few simple things on your website, so that it can be found by search engines such as Google. No search engine can easily recognise images on their own, so you should start by making sure that all of your images have plenty of keywords attached to them (you can do this easily in Lightroom or Capture NX-D). Keywords should include the location or



Keywording your photos will help make them more likely to rank highly in search engine image searches

subject, along with more words that people are likely to search for that describe the picture and its contents.

Search engines will scan the text on your site, but this is often limited to the first few lines, such as the header and strapline of the copy, so you need to make sure that these areas of the text have as many words or phrases that describe the content and that people are likely to search for. You should also try to include links within your site to different pages.

Along with what is on your site, you should also try to get as many links back from other websites as you can. First of all you can link it to any social media accounts that you have, then you can also ask other sites to link back to yours. This shows search engines that your site has content that is interesting enough for others to want to link to, which improves its search rating.

All of these elements are only the start, though, as you should also make sure that the site, text and content are updated regularly to indicate that the site is active. But while

updating these areas is good for your ranking with search engines, avoid making changes to the main layout and elements of the site, especially the home page, as this can have a detrimental effect.

## PAYMENT INTEGRATION

If you want to sell items directly from your website it's worth using one of the direct payment systems such as PayPal on your site. Most website providers or platforms will allow you to accept direct payment for items by using a system like PayPal. These systems are much more convenient and trusted by most users than sending cheques or transferring money.

## HOW MUCH TIME WILL IT ALL TAKE?

You can get started with some images on a photo-sharing site in an evening, but getting a basic website up and running will take around a week, depending on how many images you want to put online. With a more complex site, especially if you are designing it yourself, it could take a month to get everything set up.

But this is only the starting point, as a successful website

needs to be constantly updated with new images and content, and you also have to factor in the time needed to make sure that social media and online networking is helping to drive traffic to your site.

This all means that you can get started getting your images online very quickly and easily, but expect it to take a few months before you really start to reap the rewards of this approach. You also need to set aside a few hours each week to keep the site updated and make use of social media.

## HOW MUCH MONEY CAN I MAKE FROM MY SITE?

While you can make some cash from selling prints directly from a website, for many photographers it's much more useful as a marketing and promotional tool, enabling potential clients to see what's possible. So, it's hard to put actual figures on what income a website will generate, but for a wedding or portrait photographer a good website can bring in a significant proportion of your customers, while selling prints directly can generate a small income as long as you take the time to promote your site and images. ■

**“While you can make some cash from selling prints directly from a website, for many photographers it's more useful as a marketing and promotional tool”**

Cafés and restaurants can always use good-quality food photographs





## MAKE CASH WITH YOUR NIKON

### 06 SHOOT FOR LOCAL BUSINESSES

*Chris Rutter explores how other businesses can provide work for your photographic one*

From restaurants to manufacturing and service companies, wherever you live there will be businesses close by that could be a potential source of income. Even if they're not selling products, companies can always use photos. Businesses supplying services,

for example, could want anything from simple head shots of their employees to architectural images of their premises and location, or even images for flyers.

The type and style of the images required will vary considerably from company to company, so the first thing you need to

do is identify the type of shots that you are able to supply. There's no point offering to do product shots, for example, if you don't have adequate lighting and backgrounds to hand, while if reportage-style photography is your strength you could be just what an events company is in need of.



If you're pitching to companies who will need product shots, make sure you have good examples in your portfolio. You can find lots of objects to shoot in charity shops

## GETTING STARTED

While you can start looking for clients immediately, if you don't have any experience of this type of photography you'll need to build up a portfolio of images that you can use to impress potential clients. If you are employed by a company already, you can start by asking if they need any photography – your employer might need updated photos for an intranet, for example. This is a convenient way to get started, but make sure that

you have a clear idea of what is expected of you, and whether it is done in your existing hours (in which case you are unlikely to get any payment), or done outside of your normal working hours (for which you should get compensated accordingly).

## CHARITABLE BEGINNINGS

An alternative approach to gaining experience without the pressure of shooting for paying clients is to start by shooting images for local charities. Many charities need



promotional images of their events, shots for their websites and even portraits of their staff, but don't have the cash to pay professional rates for them. This is where you can help them out, while you gain some experience and confidence shooting images to a specific brief. Just be aware that you may still need to meet some basic criteria, and you may also need to undergo a criminal records check if the charity is one that works with young or vulnerable people.

## PRODUCT SPOTLIGHT

Showing off their products or services is a key way that your photography can be useful to local businesses. From perfectly-lit studio shots of the company's products, to the more creative and arty images often used by cafés and restaurants to showcase their food and drink, there are loads of opportunities for you to sell your photography services.

Look for opportunities and businesses that suit the type of images that you can produce. For example, local restaurants, cafés and bars are all great places to start if you have suitable experience. This type of subject is often shot on location, as they will need to produce the food for you to shoot, so you don't have to have your own studio space.

But if you do have a home studio, you are perfectly placed to shoot many small products or items produced by local companies such as jewellery and craft items, or small mass-produced articles. This can be easier than shooting products on location, as you'll be able to shoot them at a time that's convenient for you.

Note that if you are shooting high-value products, you'll need to make sure that you have suitable insurance in place to cover any possibility of loss or damage. In these situations you may need to shoot the items at the company's premises, so you will need to have access to a portable studio.



Shooting new employees regularly? Use your own backdrop for consistency

## HEAD SHOTS

Having professional, stylish images of their team members or employees will make any firm's website appear more personal and approachable, and this is an area where your portrait skills can really come into their own. With a basic knowledge of lighting, posing and background choice, you can sell your services to a wide range of businesses.

There are several different styles of head shot that you can offer, depending on the type of business that you are looking to shoot for. A more formal, studio style portrait will suit some big businesses, while a smaller operation might prefer a more informal style using available light and even including the

## DOS AND DON'TS OF BUSINESS PHOTOGRAPHY

### DO

- Have a portfolio of work available so that any potential client can see the quality and style of your images.
- Have insurance for both your gear and public liability, as many businesses won't allow you to work for them without it.
- Offer a different style or quality of images to those that the company is already using – but they should match the type of business that the company offers.

### DON'T

- Become too disheartened if you don't get hired by companies straight away. You'll need to be persistent and confident to get this type of work.
- Offer a service that either you or your equipment aren't capable of providing, as nothing will destroy your reputation like failing to produce the required (and paid for) images.
- Offer too much for very little reward, as it's very difficult to raise your prices once businesses know what you charge.

premises or location of the business as a backdrop.

## SOLUTIONS AND IDEAS

When approaching companies you should try to find out as much as possible about their products and business, and also



## GOING PRO: PART 6

Graham Parker is sharing what he's been up to on his journey to turning pro. Six months in, things are going well

I've had my studio for some months now, and work seems to be coming in at a regular rate. When a client contacted me recently I asked him how he found me. He told me that he Googled 'Pet Photography Trowbridge' and I was top below the adverts. I had to check it out! I tried a few more different searches, getting more general each time, and was pleased to find that I was listed top when searching for "pet photography" in the Google business/map section. I was within 15 miles of my studio address, which is registered with Google, and location-aware services were in operation, but it was still very pleasing as the customers I want are within close reach of where I am based. As for the shoot, it was a present for my client's wife: a photograph of their 12-week-old dachshund puppy. The shoot went extremely well and the puppy was a real star, which made my life extremely easy.

Planning and booking in clients for the future certainly makes the year appear to go very fast. Christmas will soon be upon us and a few months ago an acquaintance contacted me with the possibility of shooting their work's 25th anniversary Christmas party. I agreed immediately and have been waiting to meet at the venue to discuss exactly what they required. This week I finally got to see the venue – and what a venue it is! We met at Stanbrook Abbey, Worcestershire, and after touring the building it was clear to me that it was going to be difficult to find an area that wasn't a great place to shoot in!

My client's remit included two pop-up studios, one group shot, arrival shots of each couple and paparazzi/candid photography during the party. Watch this space to see how it goes!



## IN THE KNOW GAINING CLIENTS

- Successful Brighton-based commercial PR and editorial photographer James Pike gives his insights into how to gain and keep commercial clients.

"There are many ways to get work coming in, and usually it's a combination of marketing tools.

You need a good website. Show off your work, make it easy for people to find your contact details and show them who you are.

Networking is the best way to meet new clients and make yourself known locally. There are networking events everywhere.

Build up a database of your contacts, keep them informed, and engage with social media.

I find that work will come in usually through a combination of the above, and the more feelers you put out, the more likely it is



that people will contact you. From then onwards it's down to being professional and committed to working with them in a friendly, creative way. Every client who comes to me for company portraits says they want to look 'friendly and approachable' and it's just the same for us photographers!"

See examples of Jim's images, plus details of his photography workshops, at [www.jimpix.com](http://www.jimpix.com)

the type of images they already use. If the company already has some great images on its website, the chances are that you are going to struggle to get much work from that firm unless you can produce images that are better suited to its needs or have a unique twist.

It's better to look for those companies which aren't making the most of the photos or images on their websites or in their promotional material. This doesn't mean that you should simply go in and comment on the existing images, as the person you need to deal with may have sourced these images (or they may have even taken the images themselves). But you need to give them a reason to use your services. So, try and explain how your images will help to improve the appearance or style of the website or promotional material.

How you approach this will depend on the type and size of the company, and also the type of images it is already using. For example, if it's a small company which is using stock images for its promotional material, having bespoke images will help to give the company a more personal and individual appearance, which may appeal more to customers. On the other hand, if it's a larger company which



is already using bespoke photographs, you will need to identify how you could improve on them, such as giving a more consistent appearance to product images or head shots throughout the company.

## BEING PROFESSIONAL

Shooting for any business, no matter how small, will mean that you will be dealing with a professional client, so you need to approach it in a business-like

**“ Things such as business cards, a portfolio and even a website will all help you appear more professional than simply turning up and offering your services ”**

manner. Asking around friends and family is a good place to start looking for customers, but even when approaching people that you know, having a good basic set-up will help you convince them that you will do a good job. You should have a few basic things in place

before you start approaching businesses. Things such as business cards, a portfolio and even a website will all help you appear more professional than simply turning up and offering your services.

Once you have a booking, make sure that you have a basic agreement or contract in place so that both you and your client understand exactly what you are expected to provide, and by when. With a small business that you already know this can be a simple verbal contract, but it's usually best to get this in writing, to avoid any disagreements later on. With any larger business getting a written contract is vital, including the payment terms, time scales and even copyright ownership of the final results.

You'll also need to make sure that you have suitable insurance. Many businesses will require you to have public liability insurance. This covers you against claims by any third party for any damage or loss while you are shooting.







As well as more styled shots, if you're photographing objects it's worth having some on white backgrounds in your portfolio, as firms will want these for online shops

## OTHER OPPORTUNITIES

Getting work with businesses and companies will rely as much on your selling and interpersonal skills as it will on your photographic abilities, so you need to make sure that you are happy approaching and selling your photography with the type of clients that you approach. This strategy isn't for everyone, though, and there is another way that you can get work in this type of market. A few companies, such as car dealerships, online retailers and estate agents advertise for freelance photographers on job sites such as Indeed.com. These are usually paid per item or job, although occasionally it will be paid at a day rate. This type of work will often be quite repetitive, and you won't be paid as well as you would on most commercial photography jobs, but they are a good option if you're just starting out or

don't have the time or skills to start pitching for customers on your own.

## HOW MUCH TIME WILL IT TAKE?

Getting a few photographic jobs for businesses owned by friends or family might only take a few weeks to arrange and complete, but once you move into the broader marketplace you'll need to invest a lot more time and effort to make business photography worthwhile. Just like any service business, gaining a good reputation for the quality of your work, reliability and trustworthiness will take a little while longer.

With a bit more effort it should take around six months to start having success shooting for smaller local companies, while getting larger business clients can take years of work as they will often only deal



Just starting out? Try doing promotional shots for new businesses. They'll get photos, you'll get experience, and they will know who to come to as the firm grows

with established photographers that they know they can trust to produce high-quality images on time and to a specific brief.

## HOW MUCH MONEY CAN YOU MAKE?

There are many ways that you can charge for your photographic services, depending on the type of client and the work involved. Many commercial photographers will charge a day rate, or part-day rate, for most jobs. The rate

for this can be anywhere between £150 and £500 a day depending on your experience, the type of job and even the type of client you are shooting for. Alternatively, you might want to charge a set fee for the job, or if you're going to be shooting products it might be better to charge per item.

The rates that you can charge will vary considerably, from a few pounds per item if it's a simple set-up to shoot, to tens or even hundreds if you need to spend a few hours setting up the lighting or location. ■

## I DID IT! PETE WATSON

■ Part-time pro Pete Watson has experience of how personal projects can help when shooting for paying clients.

"Along with doing shoots for clients, I like to do my own projects. With these I have a lot more freedom and can do anything I like. For example, I'm putting together a portrait project that involves using only one lens and having limited time to shoot. The challenge is interesting and useful, and being forced to find solutions within these limitations is a perfect grounding for shooting for clients.

Paid shoots often involve quite limited time to get the job done. Clients don't always know what they are looking

for so you have to think on your feet. You need to know your gear, environment and have an eye for what will work and what media it will be used for. My shoot with one man and his (hire) bike in Amsterdam went through several ideas before I decided that the best thing would be to use puddles on an elevated concourse that would dovetail with the river behind, creating a clean image. The clouds and off-camera flash worked well and I knew we had a good shot that would fit with what the company needed. The key is to use experience from jobs like these to build your confidence and shooting style to help on your next shoot."

Find more examples of Pete's work at [www.petewatsonphoto.com](http://www.petewatsonphoto.com)



Pete's personal, experimental projects help him be much more flexible and creative during shoots for businesses





## MAKE CASH WITH YOUR NIKON

### 07 GET STARTED WITH WEDDINGS

*Shooting for friends, and assisting other pros, is a great way to earn extra income while gaining experience, says Chris Rutter*

Wedding photography has long been established as a great way to make money from your photography, but it can also be stressful, time-consuming and expensive to get started. So, it's a good idea to start off slowly, shooting weddings for family members or friends. In this section we'll look at the things you can

start doing right now to gain some valuable experience, while also making a bit of extra income on the side. Only when you've shot a few weddings will you know if it really is for you. Along with the necessary photographic talent – because the photos you take will be a couple's greatest reminder of their day – you will

need to be authoritative, to take charge of proceedings when it's time to get your images, but also be friendly, approachable and great with people. You will also need to be as good at promoting your business and yourself, as it's a competitive market out there, and business skills are almost as important as taking great images.

#### GET SOME EXPERIENCE

No-one is going to hire you without any experience, so it's worth shooting as many weddings as possible before you take the leap into the world of professional wedding photography. You can start by shooting candid and other less formal images as a guest for friends and family. When doing this it's important that you shouldn't try to 'compete' with the main photographer, so don't try to take over the posed

or formal shots – but pay close attention to how they work and how you might approach similar shots.

Another way to hone your skills before you go all-out as a wedding photographer is to get some training. There are many specialist wedding photography workshops and courses run by reputable companies such as Aspire ([www.aspirephotographytraining.co.uk](http://www.aspirephotographytraining.co.uk)). These courses will give you an insight into how to shoot important occasions like

weddings without the pressure of shooting at a real event.

#### SECOND SHOOTER

Once you have shot some weddings for friends and family, you could also consider assisting a wedding photographer to get experience

of professional wedding photography. To begin with, contacting some local photographers to see if they need an assistant is a good idea. Wedding photographers tend to be extremely busy during the spring and summer, though, so it's better to approach them during the quieter months of

**“Start by shooting candid and other less formal images as a guest for friends and family, but it's important that you shouldn't try to 'compete' with the main photographer”**



## I DID IT! LAURENCE SWEENEY

■ *N-Photo* reader Laurence decided to start shooting weddings professionally last summer. Like all successful wedding pros, he considered his skills before starting, and developed some further before going it alone.

"My initial considerations included my skill level, pricing and clientele. My strengths included composition, business acumen and people skills. However I had shortcomings in posing and lighting, so I decided to start with second shooting and training. I found a Yorkshire-based professional wedding photographer looking for a second shooter (via a Facebook group). This meant that my round trips were about 200 miles, so I had lots of late nights, but they were worth it.

I undertook training for posing techniques at Aspire Photography Training and I also had one-to-one mentoring. Interestingly, the advice I received was sometimes contradictory, with strong opinions on both sides. Nevertheless, I collated all the information and identified that which complimented my approach, which helped me to develop my own style.

"I would also recommend the supportive Guild of Photographers and its members. Pinterest is a source of both inspiration and also trepidation. Above all it's important to practise, including practising detail shots, and learn from your mistakes – believe me, there will be plenty."

You can see more of Laurence's images at [www.laurencesweeneyphotography.com](http://www.laurencesweeneyphotography.com)



These days will never be repeated – and that's why it's important to be sure you can do the job properly before you start taking on solo jobs

late autumn or spring. Don't expect to get rich from this, as it's rare for an assistant to get paid any more than basic expenses for the day, but it's a great way to get some experience of the business.

If you already have some experience shooting weddings

but don't have the confidence to start out on your own, you could also try contacting local wedding photographers offering to work as a second shooter. This involves working alongside the main photographer, capturing images that complement their

shots. Even though you won't be the main photographer, you still need to be able to prove that you are able to take good images before any photographer will employ you, as your shots will be part of the package supplied to the couple. This type of opportunity doesn't come along very often, so along with contacting them, it's also worth following plenty of local wedding photographers on social media to keep an eye out for any opportunities to get work as a second shooter.

At this stage it's tempting to shoot weddings as the main photographer for free, but if you are serious about making money from your wedding photography this isn't the best approach, as it's often hard to make the transition to charging a market rate for your photography after shooting for free. It's better to get as much experience as possible by



Consider where your strengths lie, and understand your own style, as couples will choose a photographer whose approach suits the vision they have of their big day



## GOING PRO: PART 7

Photographer Graham Parker is sharing what he's been up to on his journey to turning pro. This time, he organised a shoot that he hoped would pay dividends...

They say never work with children or animals and never work for free – well, a few weeks ago I organised a free photo shoot and competition with a local pet shop. More fool me, right?

I arrived early so that I could get set up. I was using a Lastolite Hilite background lit by two Elinchrom RX 4 strobes, plus another two RX 4s to light the subject. The animals were to be put on a 4x3-inch box covered with a sheet of vinyl. And, of course, I had my Nikon D7100, along with a newly acquired Nikon 35mm f/1.8 lens.

As I was waiting for the first customer to arrive one of the pet shop staff was feeding the animals. One was a red-tailed boa. We decided that it would make a great subject, so I put it on the vinyl and started to shoot. As I was shooting I sensed a customer behind me, so the snake was moved off the vinyl and I was ready for her. She took the cutest, fluffiest cat from its carrying case – a seal bicolor Rag Doll called Angel. Where else but photographing pets can you get such diversity shooting in a few seconds?

You might still be wondering why I was doing a free shoot. Well, it works like this: the shoot is free, the competition entry is free, and the winner gets a free large print. I explain to each customer that they need to return the following week to choose their favourite image for entry into the competition. While they are looking through the images I explain that they are more than welcome to purchase any of the images that they see. And that is (hopefully) where the money is made.

At the end of the two days at the pet shop it was well worth the effort and everyone that returned loved the images – and over 80 per cent of them bought a photo!



shooting as a second shooter or guest, then take the leap to charging for your time and work when you are ready to take the responsibility as the main photographer, even if it's for friends or family members.

## GET SOME HELP

Once you're sure that wedding photography really is the career for you, it's worth considering joining a professional body such as the Society of Wedding and Portrait Photographers ([www.swpp.co.uk](http://www.swpp.co.uk) – see below). These can help you with many aspects of starting out, from recommending courses and tuition, to enabling you to build contacts and even get suitable insurance. Don't overlook that last point: when you are shooting weddings you will need insurance cover for both your gear and public liability. Normal household insurance won't cover you when shooting professionally, and won't offer public liability or professional indemnity if the worst happens. This type of cover costs around £200 per year in the UK, although the amount will vary according to the value of your

kit, the amount of liability/indemnity cover, and where you are working.

## KNOW YOUR GEAR

Even working as a second shooter or assistant, shooting a couple's big day can be stressful enough without having to find your way around a new camera or flash, so make sure that you are completely familiar with how all your gear works, and be very wary of using a new piece of kit for the first time on a shoot. This is another area where shooting some weddings without the pressure of getting paid can help, as it will give you time to experiment with different settings and gear.

While you need to know your equipment inside-out, buying everything before you start can be expensive, so it's worth considering hiring some items for individual weddings, such as a 70-200mm f/2.8, or an 85mm f/1.4 lens to shoot portraits in low light. When hiring kit, make sure you give yourself time to familiarise yourself with how it works, so try to have it delivered at least a few days before the wedding.

Shooting the weddings of family members and friends can be an advantage when it comes to capturing more intimate images



## AFTER THE SHOOT

Your work as a wedding photographer isn't finished at the end of the wedding day. When you start shooting

professionally you'll also need to set aside time to go through your images, process the best ones and then present them to the couple. Even if you have only shot a wedding as a guest, try to approach processing your images as though you had shot the wedding for the couple.

This means that you will have to sort through your images to pick out the best ones, and then process them. Even at this stage of your wedding photography it's worth trying to find a processing style that suits your images, as it will give them a more consistent appearance and also allow you to batch-process many images, making only minor adjustments to individual shots.

## IN THE KNOW FIVE ESSENTIAL SKILLS



■ Colin Jones, Company Director for the SWPP (Society of Wedding and Portrait Photographers), the fastest-growing worldwide association for serious photographers, shares his tips for people starting out in wedding photography.

"As in many industries, training and mentoring is the cornerstone for building a successful business. Whether it is on the craft or the business itself, training and personal development should be the first consideration when entering the industry.

"Training can come in many forms, from one-to-one sessions and seminars to lessons in magazines and on online forums. Social meet-ups with like-minded photographers can also be beneficial to building your knowledge and skills.

### The top five skills you really need are:

- 1 Camera craft skills** – knowing how to get accurate exposures in difficult lighting, use depth of field creatively, and focus accurately on the subject.
- 2 Composition** – recognising that you should avoid simply placing the subject in the centre of the frame, and also using the surroundings for more interesting and original images.

**3 Attention to detail** – remembering to look around the frame for distractions, and to make sure that details such as the bride's dress look their best.

**4 Lighting skills** – you need to understand how to make the most of both available light and flash to get professional-looking images.

**5 Being able to give input** – your subjects will need guiding and help with posing if you're to get the best possible results.

We highly recommend that newcomers to the industry seek professional training before taking on the challenge of their first wedding. You can find out more about what the society can offer at [www.swpp.co.uk](http://www.swpp.co.uk)



## HOW MUCH TIME WILL IT TAKE?

Even if you are an experienced photographer, gaining the expertise to shoot weddings professionally won't happen overnight. It could take six months, or even a year, before you have built up the skills and





Word-of-mouth is extremely valuable for a wedding photographer – excellent work will build up your reputation

experience that you will need to shoot a wedding as the main photographer.

Once you feel confident that you have the basic skills it will take time to build up to getting a regular income from shooting weddings. Working as a second shooter for a few months will help you gain experience (and potentially some income).

## HOW MUCH MONEY CAN YOU MAKE?

If you are starting from scratch it's likely that you won't make much money for the first six months to a year. Working for another photographer as a paid second shooter you will be able to make around £100 to £200 per day. But this first year or so is only the beginning for anyone serious about shooting weddings. The bigger rewards will come when you have the experience to shoot weddings as the main photographer.

Treat these first steps like an apprenticeship, and look to be able to make enough money to cover your basic expenses. ■

**“ It could take a few weeks, or even six months, before you have built up the skills and experience that you will need to shoot a wedding as the main photographer ”**



## DOS AND DON'TS OF STARTING WEDDING PHOTOGRAPHY

### DO

- Get as much experience and training as possible before you start shooting paid weddings, either through family, friends or local pros who are looking for an extra pair of hands – even as an assistant you'll learn loads.
- Use social media to link up with existing wedding photographers and groups.
- Consider joining a society or group to help you expand your skills, and network with other wedding photographers.

### DON'T

- Expect to shoot weddings as the main photographer straight away, even if you're an experienced photographer.
- Shoot any paid wedding without the necessary insurance and liability cover.
- Underestimate how much time each shoot will take, both before and after the wedding day. For every day you spend shooting, you need to factor in at least a day, and probably two, for processing the images, printing (if required) and presenting to the client. And then of course there's all the paperwork to think about!





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# NIKOPEDIA



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An orchestrated set-up, with your camera on tripod, is an ideal situation for using Live View: here I'm on a shoot in China in a beautiful old courtyard mansion

## LIVE VIEW

Nikon maestro Michael Freeman explains just why Live View is so useful...

**'Looking at, not looking through' is at the heart of using Live View as an alternative to a D-SLR's optical viewfinder.**

Given that the SLR's raison d'être is being able to actually look through the lens at the exact scene you're about to capture, it might seem odd to side-step all that pentaprism-and-mirror engineering in favour of an electronic view, but Live View can be extremely useful.

There is, of course, a new generation of mirrorless cameras, but for those of us still committed to D-SLRs, it's the additional functionality of Live View that makes it so valuable. This includes being able to shoot from awkward angles and preview exposure and colour balance, plus live histograms, precision focusing, and, with some cameras, the ability to feed the view onto another display.

None of these features is life-changing, but they are all useful. The sheer variety of functions shows what can be done with a live feed direct from the sensor, and the possibilities of electronic display. There will no doubt be more clever functions to come, and the continual tinkering and improvements by Nikon and other manufacturers accounts for the different Live View options between models.

There's also, of course, the very different experience of shooting with a two-dimensional frame, and many people find this closer to the final product, and so easier to compose with. However, before we all go out and buy a CSC, the still-strong argument for the D-SLR is the direct optical connection it gives you to the action taking place in front of you. Live View is ultimately for special situations.

## HOW IT WORKS

As with so much of photography, it's all down to light

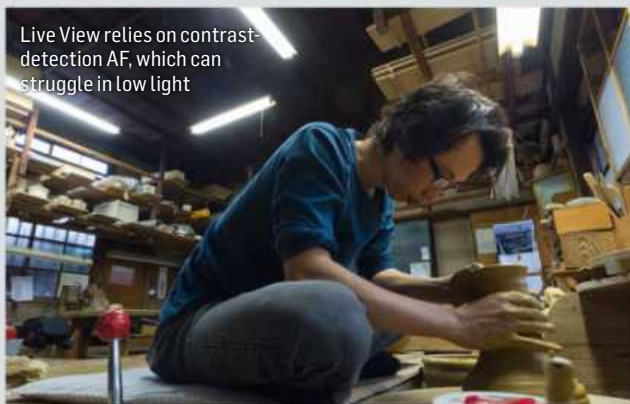
■ The basis of Live View is a direct video feed from the sensor to an LCD. For Live View, the sensor needs to stay exposed to the light entering through the lens, but almost everything about D-SLR operation is designed to limit that exposure to the moment of capture, with a

mirror staying locked up until that moment.

One change that this makes to autofocus is that the phase-detection system (which is more efficient than contrast-detection) cannot be used in Live View (see 'Two different autofocus methods', opposite). Phase-

detection needs the mirror and its sub-mirror, but in Live View these are locked up. Instead, Live View focus relies on contrast-detection. This is slower, and can have a hard time in low light, though it does have some advantages (see 'High focusing accuracy', opposite).

Live View relies on contrast-detection AF, which can struggle in low light







For this still-life of a Chinese teapot, taken with deliberately shallow depth of field, the lens needed to be focused precisely on just one part of its decoration

## COMPARE AND CONTRAST

# TWO DIFFERENT AUTOFOCUSING METHODS

In Live View, your Nikon's normal phase-detection autofocus gets replaced by the older contrast-detection system, which can be slower, but is also more accurate...

There are two main methods of autofocus. Phase-detection is the preferred system for speed plus accuracy, and works by comparing two offset images, in a similar way to how a rangefinder camera works. If they match (i.e. are in phase), the subject is in focus; if not, focus is adjusted until they are. To do this, the camera's mirror allows a small amount of light through, onto a smaller sub-mirror, and this directs the light down to a Phase Detect sensor. Light from opposite edges of the lens is directed to two sensors per AF point (and there can be many of these). That slight difference in position,

from one side of the lens to the other, is measured, and the lens alters focus accordingly.

Contrast-detection works on the principle that a sharply focused shot has higher edge contrast. Think of an edge between an area of black and of white; if the edge is sharp the contrast is higher than if it's slightly blurred. This works well in bright light, but not so well when it's darker. It is slower than phase-detection because the system has no way of knowing whether the blurred image is front-focused or back-focused, so the AF has to move forward and backward until it finds the right position. In other words,

## HIGH FOCUSING ACCURACY

Live View is fantastic for checking your manual focus

Although contrast-detection autofocus works more slowly than normal pentaprism-and-mirror shooting, it's by no means an inferior option, even though it's been imposed by needing the mirror to be constantly up in Live View. It actually allows greater accuracy, for two reasons: one is that by using the Zoom button you can magnify the live image and check the focus at 100% view – and even switch to manual focus and fine-tune it yourself. Manual focus in normal shooting doesn't work particularly well because there simply

isn't the level of detail visible in a full-frame view, but it's a straightforward matter to zoom into a small area with Live View.

The other way in which contrast-detection allows accuracy is that you can move the focus rectangle anywhere in the frame, even into one corner. Phase-detection is limited to the central area of the frame by the sub-mirror. Live View contrast-detection AF is perfect for static subjects, and even more so if you can use a tripod, such as for close-ups or architectural shots.



I wanted to be sure all the detail in this raked gravel was sharp, and Live View enabled me to check it exactly

the focus has to start changing before the system knows the image is getting sharper, and then, once it's travelling in the right direction, has to pass beyond the point of sharp focus and detect an increasing blur

before it knows that that point was indeed the sharpest. It then backtracks. There's a lot of trial and error involved (although in practice, the operation is fast) and it needs fairly bright light to work efficiently.



Live View allows you to zoom in on any part of the image, not just the central area

## STAY INFORMED

# LIVE VIEW CAN PROVIDE A WEALTH OF INFORMATION AT A GLANCE

The Live View screen is a natural display for useful settings and shooting info

Digital display opens up many new possibilities, and with Live View Nikon has taken full advantage of these by enabling you to superimpose details of your choosing. As you'd expect, all of the usual information that you'd find in

the viewfinder is laid out bottom and right, from creative modes, to shutter speed, aperture, ISO and so on. An extra row of additional information, such as autofocus, Picture Control and D-lighting, is optional. The AF rectangle is visible

in whatever position you have it, in red when it's focusing, and green when it's locked on. Cycling through the display options shows, in order: **01** A live histogram. **02** Grid, useful for shooting architecture or a horizon.

**03** A virtual horizon that works on two axes (both roll and pitch), which can be useful in situations where framing accuracy is important (see images below).

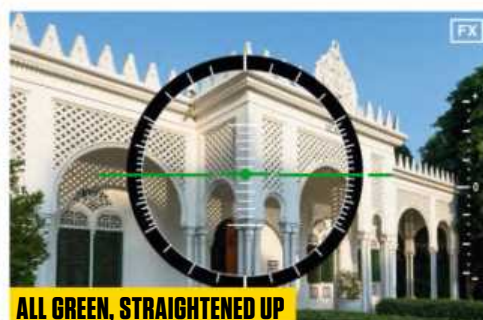
Also, let's not overlook the basic advantages of being able to see both exposure and colour balance in advance, without the need for chimping after shooting. All of this information is at its most useful in slower shooting situations – those where you can take more time and care than usual.



**YELLOW SHOWS ROLL NEEDS CORRECTING**



**YELLOW SHOWS PITCH NEEDS CORRECTING**



**ALL GREEN, STRAIGHTENED UP**



**HISTOGRAM**



**GRID**

## DIFFERENT MODELS, DIFFERENT MODES LIVE VIEW OPTIONS

■ Different Nikon D-SLRs offer different Live View modes, with slight advantages for different shooting situations. A choice between Handheld and Tripod is offered by the D300s, for example. In Handheld mode the camera uses phase-detection, but for this to work the mirror has to be dropped in order to engage autofocus, then raised again, which adds a fraction of a second, and is noisy. In Tripod mode the autofocus system

switches to contrast-detection, which can be slower for a different reason – the hunt for sharpest focus.

The D4 offers a different choice, between Quiet or Silent modes. Quiet is the default, although it isn't much quieter than normal shooting; only the noise of the mirror slap is missing, as the mirror is held up the whole time. For more significant noise-reduction, choose S from the shutter

release mode dial – this works in Live View as well. Silent mode is just that, and the first time you try it, you may not trust that you actually did take the shot! But there's a big disadvantage: the image file size is much smaller, at 2.5 megapixels instead of the usual 16, and the file saved is a JPEG, not RAW. In other words, the need for total silence, maybe at a concert or on a movie set, has to be paramount for this to be worthwhile.



Turn this dial to 'S' to access the Silent mode – but beware, it's limiting



## CHOOSE YOUR TIME

# SO WHEN SHOULD YOU USE LIVE VIEW?

There's no need to change over from normal viewfinder shooting – just use Live View as and when it's appropriate

If you use a Nikon D-SLR rather than a mirrorless model, the chances are that you're committed to a style of shooting and camera-handling that has dominated photography for more than half a century – an uncluttered optical view of exactly what you're about to shoot, looking straight through the lens you've chosen to fit. It's worth remembering the reasons for the SLR's high success, chief of which is that you have a perfect and direct relationship with your lens of choice, and you can fit any of many.

When the SLR was invented, it swept rangefinder cameras off the board of serious photography, with the notable exception of the Leica (which is more an optical and engineering institution than a brand). Bulk and weight are trivial arguments against D-SLRs for anyone who takes photography seriously, and to be honest there's much that's genuinely satisfying about having a substantial and

ergonomically-designed piece of equipment in your hands.

As such, it's important to see Live View as an extra tool for special circumstances, not as a competing shooting option. Given that its principal features are to do with display, it's at its best when you can take your time, and is arguably the best option whenever you're in a position to be using a tripod. Architectural, the slower kind of landscape, studio, organised portrait – these are where Live View shines. But I'll also add the unusual condition of active, unplanned shooting when you don't want to be seen as a probing photographer.

In street photography, for example, people often sense when you're looking at them, and easily notice when you're pointing something at them at eye-level. But looking down at a piece of equipment in your hand is a different matter, as anyone who once shot with a waist-level camera like a Rolleiflex or a Hasselblad will remember. If your LCD screen tilts and swings out, so much the better, but even when it's fixed, it can give you a more discreet view, as in the example here.



Using Live View at waist level, it looks like the photographer is examining his camera rather than using it



A conversation in a South American street so narrow that holding the camera to the eye would immediately have drawn attention to the photographer and risked losing the shot

## FOR AND AGAINST LIVE VIEW

WHAT'S GOOD	WHAT'S NOT
Shows the scene as it will look	Slower shooting
You can see the effect of exposure and white balance settings	Not good in bright light
Good for levelling and aligning	Small screen conceals critical focus
Articulated screens are good for awkward positions	Not for the long-sighted
You can hide your intentions when shooting candids	Constantly exposed sensor may collect more dust
Enables you to focus anywhere in the frame	Slower autofocus system
Mirror-up removes one cause of camera shake	Uses up battery power

# USING YOUR NIKON TO SHOOT VIDEO

Michael Freeman explains how to use your camera's red button without (too much) pain...

**Video shooting came to be featured in D-SLRs more because technology meant it could be, rather than because photographers had ambitions to become moviemakers.** A lot of development work had to go into making this possible in terms of processing, but the hardware, from sensor to lenses, was already there.

The difference between pressing the black button and the red button on a Nikon may be very small in an operational sense, but they unlock different worlds. Any of us interested in shooting video with our D-SLRs needs to make an important decision: how seriously are we going to get involved? You can take it very far, of course, to the point of abandoning your still photography and making videos professionally, but the cost of any extra equipment can then be several times the cost of the camera. Over the next few pages we'll assume an interest that stays secondary to stills shooting. Even so, we'll present two levels of kit and involvement – basic and next-step.

Preparing your camera for shooting video takes a little longer than for stills, for one important reason: you do not have the safety net of shooting RAW. While elsewhere we've stressed the value of RAW, and how easy it is to adjust settings like White Balance long after you've taken your shot, in videoland what



you shoot is largely what you get; there's no ability to make serious changes in post-production to recover blown highlights, for example. As a result, you have to think as if you were shooting JPEGs that have to be spot-on, with no safety net in the processing. This is also a good reason for using the camera settings to keep contrast and saturation low, as it's easier to increase these later in processing than it is to reduce them.

As stills photographers, we all start out with a great advantage when tackling video – we already know how to frame and compose, plus we understand lighting. But then there is also a new visual language to learn, one that includes smoothness, stability, continuity, and a particular kind of variety between shots to keep the flow of imagery interesting. Finally, editing is important; so much so that one of the mantras of video production is 'shoot for the edit' (see Shoot for the edit, page 145).



Making a simple video of a guzheng player in Chongqing, China, with sound: camera locked off, fixed focal length lens, mic with windshield mounted on camera and sound fed to camera

## BASIC KIT YOU MIGHT BE SURPRISED AT HOW LITTLE YOU NEED TO START WITH...

- Large-capacity, fast memory card. Video eats gigabytes of space.
- Tripod or pocket tripod (though you might need to find a raised surface for the latter).
- Lapel microphone with an extension lead of at least three metres so that you can film yourself or another subject talking to camera.



## NEXT-STEP KIT IF YOU GET SERIOUS ABOUT VIDEO, YOU'LL NEED THIS TOO...

- Fluid head for tripod for improved movement damping
- Lightweight, collapsible shoulder rig for hand-holding
- Medium-angle shotgun microphone with wind shield
- Portable sound recorder (there's an argument for including this item in basic kit)
- Mounting rig for sound recorder and shotgun microphone (attached to camera's hotshoe)
- Separate monitor. This is something of a luxury, but if you plan to shoot video fairly frequently, the larger screen is a considerable advantage over a camera's LCD. The better screens have a peaking display

to show where the sharp focus is.

- A second camera.

Two-camera shots make it possible to cut from one view to another during the same continuous sequence, and this is very valuable, particularly in a talking-head shot or an interview, where the basic set-up is quite static and can become boring. This may seem like a big investment, but now that most D-SLRs boast video capability, how about using the camera you just upgraded from? Or a friend's camera?





## SMOOTH OPERATOR

## IF YOU HAVE TO MOVE, KEEP IT SMOOTH

You need to avoid jerkiness at all costs, either with a perfectly still camera, or with super-smooth movement

**When it comes to video, the key is: no jerky movements.**

Jerky videos are extremely irritating to watch. Keeping everything still is a safe solution, meaning the camera motionless on a tripod and no lens movements (so no zooming in or out). It runs some risk of being boring, but it is also a recognised style of filming that can have the virtue of being calming and decisive. At the start, you could do worse than use this as the default set-up – a perfectly still camera always looks professional.

However, video also benefits from the dynamism of a moving camera, which in the professional world means a fluid head for the tripod; slider, jib and dolly shots; and handheld shots with a stabiliser, even if it's only a gimbal head. The emphasis is on smoothness, which usually means some damping at the beginning and end so that a movement gently accelerates at the start, and finishes with deceleration.

A fluid tripod head produces exactly this damping effect, making it one of the first investments to make if you intend to move beyond basic video. A slider also offers good value for money, as a tracking shot looks professional and can make almost any static shot look good,



but again, it has to be smooth.

If you're still at a basic level and don't want to buy lots of equipment, one simple and generally acceptable method for moving the camera is to use your own body movement; with the camera strap fairly short and around your neck, push the camera forward at eye level and use the tension on the strap to hold it firm. Twist your torso or lean forward or backward for smooth movement. Use a wide-angle lens to minimise the appearance of unsteadiness.

One exception to this is what's called 'subjective camera'. In this

style of shooting, you hold your camera at eye level and present your own view to the audience. This works particularly well for walk-throughs, such as moving along a corridor. Viewers will accept some jerkiness if they feel that they are doing the walking. This is one occasion when, if the light levels vary significantly (as they're likely to between rooms, or if entering a house), it makes sense to leave the exposure setting on Auto rather than the usually recommended Manual.

Finally, never use zoom. It will irritate the audience, not least

**Lightweight shoulder rigs are fairly inexpensive. Look for a shoulder rig with a rail mount if you can afford one, as this will allow you to attach other kit later on if you get really into shooting video. Useful add-ons include a lens support, a monitor and a follow focus (for smooth focus-pulling while shooting)**

because turning the zoom ring smoothly is difficult, and the start and finish are likely to be jerky. If you do need to 'zoom' in or out, move smoothly with the camera, or shoot a sequence of two or more video clips using different focal lengths or having moved the camera in or out.



Tips for steadying the camera include using a wide-angle lens (here a 14mm is being used with the 30p crop setting for maximum quality), a lightweight shoulder rig, and pushing the camera forward against the strap for extra steadying tension. Then simply walk quite quickly, and as smoothly as possible to track the subject



## TAKING CONTROL

## YOU'LL NEED TO RETHINK AF, RAW AND MORE

Shooting video means resorting to manual focus, and also exposing more accurately, as there's no processing safety net

**Autofocus and auto-exposure may sound like a good idea, but they usually ruin a video shot.** The first causes the lens to jump around while searching for focus and the second can cause annoying fluctuations in brightness. It's usually much better to focus the lens manually first and then, using Live View, adjust the shutter speed, aperture or ISO until the level of brightness

looks good. As mentioned on the previous page, the one exception is a subjective camera shot like a walkthrough.

If possible, shoot a dry run first – a short clip is fine – and play it back to check that you're happy with your focus and exposure. Any highlight clipping warning shows only at the beginning of playback, not while you're filming or actually

playing back. Try to avoid over-exposing the scene or clipping highlights; you can't recover detail in them later as you're not filming in RAW, but you can compensate a bit for under-exposure. Also, dark shots 'read' much better with a moving image than they do in a still image, as the movement helps the eye to understand what's happening within the frame.



On the left you can see a solid set-up suitable for a planned, 'locked-off shot' with a sturdy tripod. The camera fits into an aluminium 'cage' rig – it's protective, cuts out vibrations, and has fittings for several attachments. The set-up on the right, meanwhile, gives me two audio recording options: a Tascam Recorder fitted with a fluffy windshield for ambient noise, and a medium-angled shotgun mike also fitted with a windshield for recording action taking place directly in front of the camera

## SOUNDS GOOD

## CAPTURING AUDIO

A good soundtrack can transform your finished video

**Sound is worlds apart from the silent imagery we photographers are used to, but your video needs it, otherwise your carefully-crafted footage will play as one long embarrassed silence.** The sound you'll get if you simply record it via the camera's mic, however, is of terrible quality. That's not Nikon's fault – good audio needs a good (and usually large) microphone, and there's no room for one in a D-SLR.

At a pinch, you can get away with recording ambient sound using the camera's microphone, as long as you don't play it at full volume. To record good-quality sound for your videos,

however, you will need at least one good microphone, and a portable sound recorder. Together they are quite expensive – you can expect to pay around £500/\$600 for both bundled together.

If you're on a budget and really can't stretch to a sound recorder and good microphone, one alternative option is to add a separate soundtrack, which generally means either a voice-over or music. The voice-over would usually be a commentary; either yours or someone featured in your video. The least expensive way to do this is with a lapel microphone, or Lavalier, which start from as little



'Self to camera' is often more interesting than a voice-over recorded later. A Lavalier mic with lead concealed under clothing is effective for a voice recording

as £12/\$15. Find a room that is quiet and small (without echoes) to record the commentary. Music can be even easier still, but you may need to pay for its use (if you plan to show your video to anyone other than friends

and family) or find a website offering free music. In the latter case, the music is often produced by young musicians wanting exposure for their work, so it's polite to credit them at the end of your video.



## ON THE MOVE

## SEQUENCES VS STILLS

The basic unit of video is the sequence, and it demands thinking in almost the opposite way from stills

**The basic photographer's skill is to capture meaningful moments from the flow of events, while the videographer aims to capture a sequence of that full flow.** So, still photography is about single images, while video is about sequences. You need to think in terms of the several-second clip – how it starts, how it flows, how it ends.

A well-planned video clip usually has a beginning, middle and end. A cinematographer friend of mine, Ron Fricke, had this advice when I was getting started in video: "Start and end with two good, different, frames, then find a way to move smoothly between them." Start paying attention, if you haven't already, to the way TV

and movie sequences are composed and timed. One basic kind of sequence has the camera locked off, with an event unfolding within the frame. Another uses a moving subject, such as a person walking, to carry the sequence; the camera moves to keep them in frame. There are obviously infinite variations, such as a still shot where someone moves into the frame and the camera then picks them up and moves with them, or vice versa.

Film for slightly longer than you think you need to. Videos need editing, and there are things in post-production that need time. For instance, the start and end of your clip may be jerky because you jogged the camera when you pressed record; or you may want to dissolve from one clip to another, which will take up a second or so. And, of course, the action in front of the camera will vary and you'll want to select the best parts.

The answer is to take more time rather than less. There's no disadvantage other than the fact it will take up more memory card space. The rule of thumb is never shoot for less than ten seconds. Also, vary your angles and the focal length of shots, to give you more choice when assembling the video (see Shoot for the edit, below).

## SHOOT FOR THE EDIT CHOPPING AND CHANGING

■ Unlike still photography, video is assembled later in the edit, and even the most brilliant clip is only raw material. To maintain viewer interest, think about and shoot from a variety of different angles, including a side-on view or a backward-looking view. Also use different focal lengths, from wide to long. Basically, the more you shoot, the more choice you have later to assemble a lively looking video.

There are no hard and fast rules about how long clips should be in the final edit – in other words, the speed of cutting from one to another – but if you pay attention to the way in which television documentaries, for example, are edited, you'll see that it's quite common to cut every few seconds. Audience attention spans are notoriously short, and just because you're happy to gaze at a something you shot for a minute, don't expect others to be quite so fascinated!



These frames are from an 80-second clip with the camera locked off, starting with a long shot of a canal

## ESSENTIAL SETTINGS

Here are some tried and tested settings for successful video shooting

■ Manual mode for both exposure and focus (the exception to this is handheld subjective camera shooting in busy, light-changing situations, such as walking through rooms).

■ Video settings depend to some extent on what the end use is, but for highest quality shoot 1920x1080 at 30 fps.

■ Unless you're using a wide-angle lens at a small aperture, always measure the focus, and don't rely on your eye's judgment. Shallow-focus filming with a wide aperture is a video favourite, but both the

viewfinder and LCD screen are too small for focusing accurately by eye. Ideally, use the Live View zoom to set the focus before filming.

■ Picture Controls should be Standard or Neutral, with contrast at minimum, sharpness either off or low, and saturation low. Shoot flat, and adjust contrast and saturation in post.



■ Shutter speed should be double the frame rate, so 1/60 sec or more.

■ The ISO can be set to whatever you like, but remember that above about 1600 you're likely to be more aware of noise than you would in a still photograph.

■ For a safe, reliable shot, use a tripod; or at least keep the camera steady.

■ Let the video run for a few seconds before the action and after, to avoid getting any irritating camera shake from touching the controls.





When you've shot a scene that you cannot repeat, the last thing you need is to lose it to a misbehaving hard drive. As such, you should practise a safe, speedy archiving workflow

## AFTER THE SHOOT

Nikon guru Michael Freeman explores what to do with all your images – and how to keep them safe – once you get home from a shoot

**Every photographer's reputation rests on a fairly small selection of images, which in fact represents a tiny proportion of their output.** To be able to make these selections, your archive of images needs to be organised. On the face of it, organisation sounds tedious, boring – a world away from the creative excitement of actually shooting. Well, yes and no. First

of all, it does have to be done, otherwise you'll never be able to find anything, least of all the gems. But beyond that, why shouldn't you have the luxury of enjoying browsing through your photographic history?

Perhaps surprisingly, the thought that has to go into the organising of images has very little to do with computers and software. They can come along later. You can make all

of the important decisions about how you're going to arrange your collection of photographs in your head, or on a scrap of paper.

There are two sides to organising your image files, and it's essential to plan both of them carefully in advance. One is where exactly on your computer or storage device you will put them – and this will certainly mean nesting folders inside other folders. The second is a naming system, which means a plan for filenames that you can use not only for all the images you have already taken, but the many more you expect to take. There are good reasons why your filenames should not mirror the folder names, which we'll explore in more detail later on.

Beyond this, there is another step that, if you've not done it already, you should do right now, without delay, and that is to make *at least* one back-up copy of every image in your archive. Having images in digital format is hugely convenient, but it's all too easy to lose them – permanently. From deleting images by mistake to computer crashes, the possibilities for losing irreplaceable images are many and varied. The only solution is to make at least one copy (and preferably two) and store the duplicates away from the rest. We'll look at how to do this over the page.

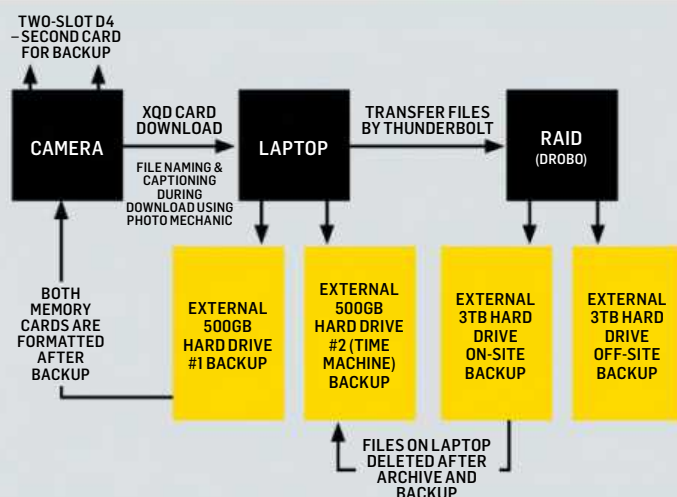
## TOTAL WORKFLOW: AN EXAMPLE

Here's one example of backing up – on the road and at home

■ How you handle your image files, from shooting through to archiving, will depend on your style and volume of photography. There isn't a single workflow to suit everyone. Here is mine, which is quite conservative and takes into account that I travel a lot – most people's workflow would be a bit less involved.

On the road, I download images to my laptop at least daily, numbering and captioning as I go. I use Photo Mechanic for this, during the process that Photo Mechanic calls 'Ingest'. At the end of each day I make two back-ups onto portable hard drives, one using Apple's Time Machine, the other by

dragging and dropping. My trips can last a few weeks, so I have to ensure that the capacity on my laptop hard drive and on the two portable drives is sufficient. After I return from a trip, I transfer the files directly to my Drobo 5D storage device (see page 148). I then transfer copies of all files to a 3TB hard drive.





## JOIN THE ORGANISATION

# ESTABLISH A HIERARCHY

Make your organisation system suit your own style of shooting

A typical method for using folders in which to store images is to nest them in a tree-like structure, with sub-groups sitting inside higher-level folders. Much depends, though, on the kind of photography you do, and in particular its subject matter. To the right we show two main divisions: travel-oriented and project-oriented, and each influences the groupings.

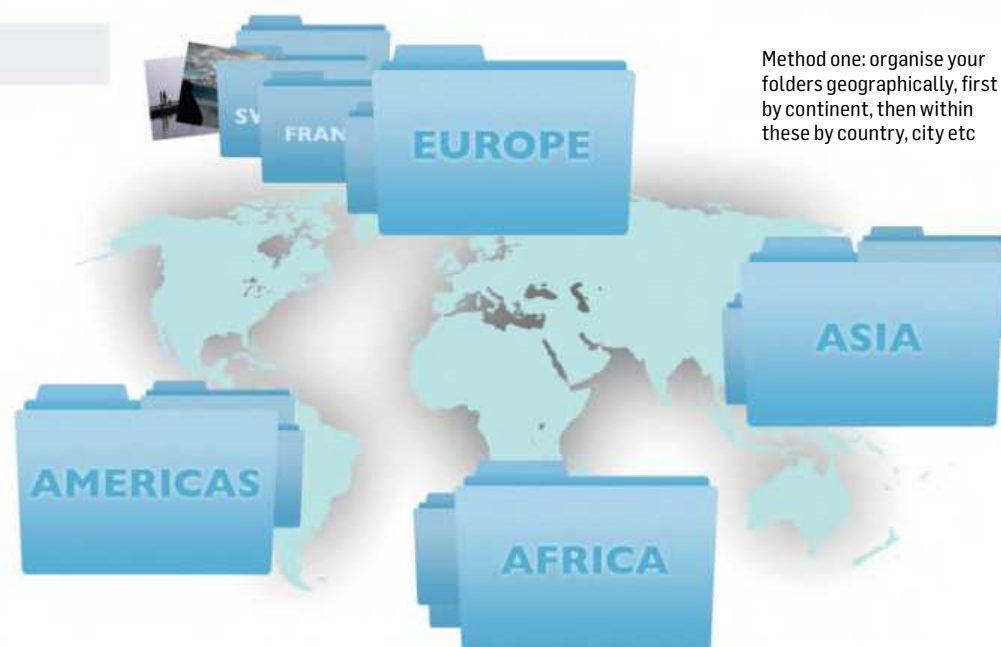
If you specialise in a subject, that will almost certainly define the way you group your images. Someone who shoots mainly macro and nature, for example, will probably aim for a system that's divided by

species. If you're a generalist, on the other hand, the physical location may be the most natural grouping: country, city and so on.

One way to help give you a clearer idea of how to do this is to imagine how someone else unfamiliar with

your archive would want to search. What folder title(s) would they expect to find? And remember that cross-referencing (see page 149) gives you an extra option for searching. Provided you use sensible filenames and add keywords, anyone

can search for an image using any search method the cataloguing software offers – so, if you've been shooting a collection of cinema façades around the world, you could place an image in a country folder, but still find it by searching for



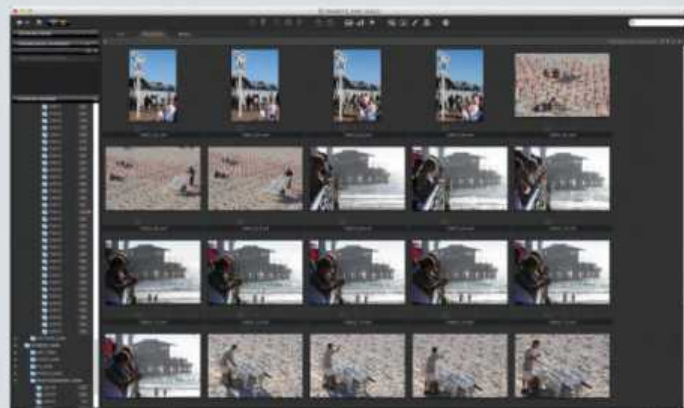
Method one: organise your folders geographically, first by continent, then within these by country, city etc

## STORE RAW SEPARATELY?

It can be useful to treat your RAW files like negatives

■ Most of us process only a fraction of what we shoot into TIFFs and JPEGs, the reason usually being that we shoot a large number of frames in order to capture the moment or that best-lit image. Depending on your shooting ratio (successful images versus the rest in a given situation), you might want to consider keeping the successful edits in separate folders, so that you don't have to wade through loads of 'not-quites'.

Another logical reason for doing this is that as RAW files are unchangeable (you cannot overwrite them), they act like a store in the same way that old-fashioned film negatives used to. The filenames stay the same, as only the suffix changes. In other words, using a date-plus-number scheme, a RAW image might be labelled 2014-11\_003.nef. If you process the image, you could save it in another folder, perhaps titled 'EDIT', as a tiff called 2014-11\_003.tif.



Method two: organise by subject matter and theme, regardless of location



## SAFETY FIRST

## BACK UP, ALWAYS

Remember the mantra: to prevent foul-ups make back-ups

Digital information is potentially so easy to lose. You can overwrite files by mistake, you can delete by mistake (you can do all kinds of things by mistake!), and very occasionally bad things happen to good computers and their drives. It's also easy to ignore the need to make copies and store them elsewhere – that's what a back-up is – but all you need to do is to imagine how you would feel if you lost your images, forever. Remember, you can say 'but it never happened before' only once! For this reason it's important to keep the back-up

images on a different device from your computer, in case of a crash, and the simplest method is separate, external hard drives. There is software that will perform back-ups, and many computers have this option built-in, but it's also simple to do it manually with a Copy command, or by dragging and dropping. And make back-ups immediately – if you wait, you might forget. Here's a typical workflow:

**01** Download images from the camera or memory card to the computer's hard drive, or connected



Even on the road (or in this case the River Irrawaddy), take every opportunity to download images from memory card to laptop. This is the first step in safeguarding your work

standalone storage like a RAID or Drobo (below), as soon as practical.

**02** Copy these onto a separate hard drive. These are your first back-up.

**03** Only delete images from the memory card (by reformatting) once

you have downloaded them and made the back-up.

**04** For extra safety, make a second back-up on a second separate hard drive, and keep this in a different physical location – ideally off-site.

## SEPARATION ANXIETY

## ARCHIVING VERSUS BACKING-UP

You need files to work with, but also duplicates that you never touch, except if needed

An archive and a back-up are not the same, although they are easy to confuse. Your archive is where you store your digital image files for use, and a back-up is a copy of that – not for use, but to recover files in an emergency. The kind of emergency we're talking about includes a hard drive crash, fire or other physical damage, and also your deleting files by mistake. So, one copy of your image files on your computer does not a back-up make – it's basic storage, aka archive. Archives, back-ups and extra back-ups need to be on separate individual drives.

First the archive. It could be on the hard drive of your

computer, but then you would be limited by the space available (computer hard drives tend to get filled up with all kinds of things) – plus it would be no more secure than your computer itself. If you use a laptop rather than a desktop computer, its portability and thievability put it at risk.

The safe and professional approach to archiving image files is to use a RAID system or similar.

RAID stands for

Redundant Array of Independent Disks or Redundant Array of Inexpensive Disks (there's no general agreement on how it got its name). It is a single device containing several hard drives which are

configured in a special way so that the single files are stored across all of them. This means that, depending on configuration settings, if a single drive fails, nothing is lost. I should say when a drive fails, because ultimately they will. A typical set-up is a RAID device with four bays into which you can put any size of drive you like; a quarter of the capacity is set aside for safety, also known as redundancy. So, for example, if you

have four 1TB drives configured like this, you would effectively have 3TB of storage, but if one drive fails, you just replace it with a new one.

One popular, reliable brand which is similar to RAID but uses its own system is Drobo. It monitors the health of the drives and reports this on a display, and the drives are 'hot-swappable', meaning that you can change a drive without turning off or stopping using the Drobo.



Drobo, a RAID-like storage system that features hot-swappable drives, is ideal for archiving images



Physically separate from the Drobo archive, a 3TB WD external drive is used for back-up. It contains identical copies of recent files

## TRY NETWORK ATTACHED STORAGE FOR ARCHIVING

As home networks become more popular, perhaps it's time to think of putting your archive on a network. This is where NAS, or

Network Attached Storage, comes in. Each unit is basically a cheap computer with storage bays for two or more hard drives, and it connects directly to your Wi-Fi router.

They're relatively easy to configure, and can be accessed by other devices, including your laptop when you're travelling. But, its network capability makes it even more important to have a separate back-up.



A family of NAS servers from NetGear



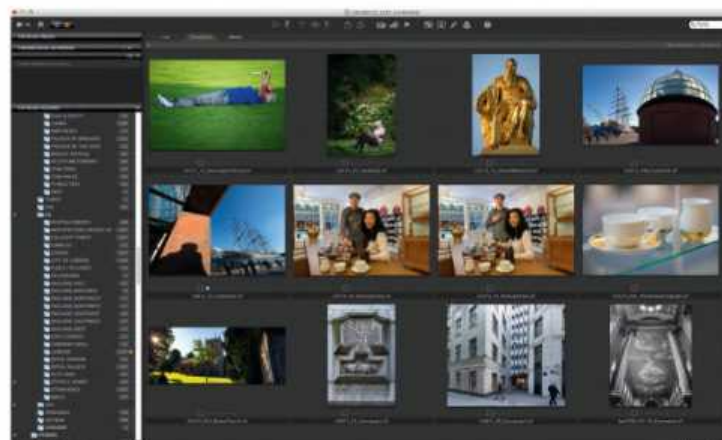
## EASY VIEWING

## CATALOGUING SOFTWARE

If you enjoy looking through your archive of images and making selections, treat yourself to an image database

The most used software in my studio is not actually Photoshop, but an image database, otherwise known as a catalogue. When you spend time trawling through your images, it makes life easier and more pleasant to do it through dedicated software. Working out of the folders directly, by double-clicking thumbnails or by dragging them onto a viewer, is frankly tedious. The most widely

used image database is Adobe's Lightroom, which, of course, also enables some image processing, but there are others. The example I'm showing here is MediaPro from PhaseOne. This is a totally dedicated image database (meaning it does nothing else) that is designed for viewing, arranging, captioning, launching other programs (such as processing software), and making new catalogues.



Media Pro, an image database dedicated to viewing and organising images efficiently

The difference between this and a real-time browser such as Photo Mechanic is that its catalogues create their own previews (of more or less any size and quality depending on how much space you

want to give them and how fast you want it to work), and so can operate without direct access to the images. This is useful if you want to make a copy of the catalogue and use it on, say, a laptop when you travel.

## WHAT'S IN A NAME?

## THE VALUE OF CROSS-REFERENCING

Assign your file names as carefully as your folder titles

Cross-referencing means to reference something (like an image) from another part of the archive, which may not sound earth-shattering, but it involves a

simple and good idea: using another way of describing the image to make it easier to locate.

If, for example, your image is in a folder titled 'Football', it's a waste of a filename calling it 'football00035', meaning your 35th football picture. Instead, take advantage of the fact that you need to do two things – place images in folders and give them unique filenames – by doubling up on the information. So, if you were using a number-order-by-shooting method, it could be 4056\_ManUtd, which would give you three ways to search: browsing the Football folder, browsing by date, or browsing by team – or a mix of all three. EXIF data gives you additional ways to browse, such as by camera or lens.



Folders offer one method of dividing files, but then use filenames, such as a date system, to cross-reference and make searching even easier

## COPIES AND VERSIONS

You might want to keep an image processed in several ways

If you are shooting RAW, one filing advantage is that you can never actually overwrite a RAW file, so there is little danger of losing the original other than by some catastrophe, such as a crashed drive. You may, however, end up making more than one version of the image as a TIFF or JPEG. You might, for instance, want a smaller version for emailing, or you might change your mind about the processing and make a second, different

version. Here it becomes all too easy to overwrite the first version, unless you work out a naming convention that takes this into account. You could, for example, add letters, such as \_s for a smaller version or \_crop for a cropped version, or simply v1, v2, etc, for versions processed differently. One distinct risk is to have two identically named copies in different locations – and then forget which is which!



Here's the original image plus two extra versions, one that's been processed to be a little lighter around the feet, the other converted to black and white

# COMPOSITION

Our roving Nikon sage Michael Freeman explains why rules do not – and cannot – work for every image

There's no dial, button, menu option or firmware for composition, arguably the most important consideration in photography. Kit has nothing to do with it, which may be one reason why it gets little serious attention. Another reason is that there is no fool-proof formula, no reliably predictable technique, for doing it well, despite any advice you may have seen. If you think I'm being provocative, consider this: while focus, exposure, white balance and so on are things to get *right*, composition is all about being interesting, not correct.

First, though, composition has a job to do. Like everything else in the process of creating a worthwhile photograph, it should have a purpose. Indeed, it has more than one job to do, depending on the scene or the subject, and depending on what you are trying to achieve in the image. The three key jobs of composition are: first, to organise the image and create some kind of order out of the chaos of the world around us; second, to direct the viewer's attention where you would like it to go, and so take charge of the viewing experience; and third, simply to add interest.

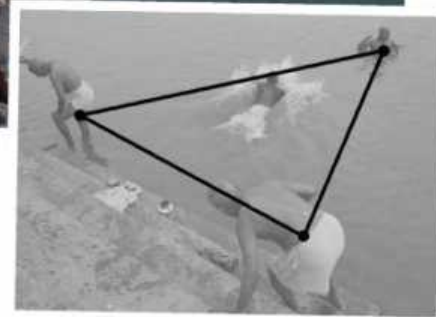
This is why there really are no



rules. The moment composition becomes too predictable, which is what rules of any kind are designed to do by definition, you lose a large amount of the viewer's attention. In fact, if there's one thing that almost counts as a rule when it comes to composition, it's 'don't be boring'. As I'll try to show over the next few pages, there are practical techniques and principles that you can use to make your shots more

appealing and engaging (maybe even more than they are already), but even here, you need to resist the temptation to follow them slavishly.

The plan I'd like to suggest is to think about four kinds of decision: framing, placement, division, and dynamics. You don't have to tick them off slowly one by one, but thoughtful composition means taking them into account.



Three similar subjects – bathers in Karnataka, India – make an immediate triangle, especially as one edge is aligned with the steps. The fourth bather adds some action to the image and fits neatly into the triangular shape

## EXPLOIT VIRTUAL SHAPES

Smooth lines and shapes help define a shot

By nature, the eye and mind are hard-wired to make visual connections, even if the connections we see have no basis in reality. Our visual system is always trying to find simple graphic structures in the scenes in front of us, especially in photographs. For example, in the shot of the bathers at the top of this page, three obvious subjects close to each other become, in our mind's eye, a

triangle. We're conditioned to make things complete. Similarly, we like to link different visual elements to make a smooth contour, such as a straight or curving line, regardless of what these elements actually are in the real world. If you take advantage of this when composing your images, it will usually make the image more interesting to look at. It adds, quietly, another small layer to a photograph.



Virtual circles are surprisingly rare in real life, which makes them all the more desirable to capture. In this case, the moving arms of a line of dancers create a circle. A slow shutter speed is a tempting choice as it will create radial blur



## IN THE FRAME

# DECIDING WHAT TO INCLUDE IN THE SHOT

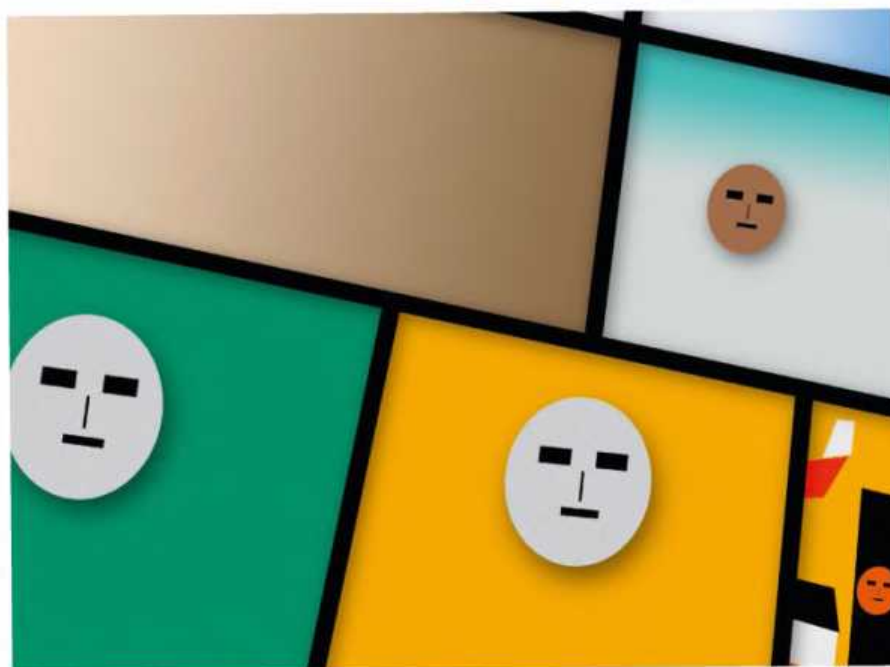
Take charge of what part of the scene you're going to pull out

Framing means deciding not only what to include within the viewfinder, but also what to leave out, which can be even more important, as it keeps your chosen elements in and the rest of the world out. You may have to decide what to include/exclude in much less than a second, for instance, and that's too short a time to do any conscious thinking, so it's important to train yourself to shoot intuitively... and that's only possible through constant practice.

Moving the rectangle of your viewfinder over the scene is, if only by a fraction of a second, the primary decision. Also (and this may sound obvious) when you buy your camera you buy into the camera format, which means the shape of the frame that the manufacturer chooses – in our case, Nikon. So, that's 3:2 for D-SLRs and CSCs, and 4:3 for most compact cameras.

Of course, you can choose to shoot loosely, with the idea of cropping in a bit tighter later, but that's a bit sloppy, not to say slightly indecisive – plus it means reducing the number of pixels in your finished image, which has implications when it comes to how big you can print it without it started to pixelate.

There's something satisfying about composing images just, and exactly, within the frame you're given. To do this well you need to pay attention to what's going on near the edges of the frame, because they attract attention. You can cut through anything you like, and align or even misalign an edge with something in the scene, but make sure that it's deliberate and for a reason.



The idea of this shot, taken in Chennai, India, was to make use of the strong divisions, but in a disruptive way. This depended on cropping in tightly on the panels and keeping the man isolated in a tight upper corner

## THINKING OUTSIDE THE BOX

In the digital era, it's extremely easy, even when shooting handheld in a fast-moving situation, to shoot a scene wider than the standard 3:2 ratio: simply pan the camera slightly to one side, take a second shot, then pan a bit more and shoot a third, and so on. You just need to overlap the frames by about half and stitching software will do the rest. However, shooting like this means composing in your mind's eye. There's no image preview to refer to, and this is a situation new to photography, that of having to imagine what the final image and frame shape will be.



A handheld pan-and-stitch of a Dai village in southwestern Yunnan, China, executed in a few seconds with heavy overlap for ease of stitching. Adobe's Photomerge performed the stitch automatically, with the Adaptive Wide Angle filter used afterward to straighten up the frame



## PRECISION ENGINEERING

## THE ART OF PLACEMENT

If there's an obvious subject within the frame, consider the nuances of its exact position – where is the best place for it?

Placement is where – and why – you position your main subject (if there is one in the scene; sometimes there's nothing that definite). It's also how large in the frame that subject should be, from filling it to the edges to being part of a wider scene. Filling the frame is the most straightforward option, as it reduces the decision-making (though not completely, as there's still a decision to make about how close to go to the edges). Tight can look uncomfortable, but you might also see it as ultra-precise (below). Or you might prefer to have more

space around your subject. These are personal creative decisions.

The smaller the subject is in your frame, the more important the decision about where to put it becomes (and please forget the rule of thirds as it's an obstacle to being interesting). The context becomes more important as the subject becomes smaller, because they have a relationship – one of your choosing. If you position a small subject off-centre, for example, you give the setting more importance, and encourage the viewer's eye to flick from one to the other (right).



With a lone subject, the main question is usually: how big should it be in the frame? Here is a conventional framing of a puffin (left), and a tight crop (right), which has three areas, in red, that feel uncomfortable. This 'just-fits' approach has its own appeal in some situations



Eccentric placement, where the subject is away from the centre of the frame, is always more striking, but generally demands a reason of some kind, otherwise it can just seem perverse. Here, the logic is that the seafront buildings very obviously face out to the right, so including the girl moving in the same direction made sense

## VISUAL WEIGHT AND WHAT IT DOES TO AN IMAGE

Some elements draw the eye more than others

■ Different subjects have different visual weights, meaning they draw more attention to themselves than their size or brightness might suggest. The human face is the prime example: even when a face is small in the frame, taking up just a few percent of the space, it draws the eye. And just the eye alone will do the same.

Words and numbers also have significant visual weight, so if we see them in a sign in a photograph, our eyes involuntarily go toward them. That's because we know words are meant to be read. Also, any compact, enclosed shapes attract attention, which is why circular objects also score highly for visual weight. Knowing all this, you can use varying visual weight positively – such as confidently keeping a face small in the frame, knowing that it will draw attention despite its size – or defensively – such as re-framing to avoid words on a T-shirt, which might draw the viewer's attention away from where you want it to go.



Faces and lettering all have extra 'pull' on the viewer's attention. Eye-tracking shows the parts of this image of a Red Cross hospital tent in Sudan that have strong visual weight



## PERFECT HARMONY?

A bit of tension does your composition no harm...

■ Balance satisfies a deep-seated human need, and we understand it viscerally. We naturally see visual relationships, such as between two subjects in the same frame. More than that, we feel they ought to balance each other. Balance is about resolving two or more elements

that in some way contrast or oppose each other. It's a way of arranging an image so that the result seems in some way 'right' and pleasing.

However, there's a big difference between this desire to balance things and actually satisfying that need. Our enjoyment of looking at images

is much more complex than that. A lot of the entertainment that people get from looking at photographs comes from unresolved tensions. Simply handing a perfectly balanced image to a viewer isn't very interesting. An audience wants something to do visually. It wants a bit of a challenge.



The jarring composition here is unconventional and not necessarily pleasing, but it pulls the eye around the frame for a striking image

## GET THINGS IN PROPORTION

### DIVIDE WITHOUT RULE

In any shooting situation, there's room for both conventional, harmonious division, and for the unexpected and challenging

■ While not all scenes have anything to divide them into different sections, many do, and where there's a clear separation on either side of a line, such as with a horizon in a landscape, you need to decide where that line goes within the frame: high, middle, low, to one side, and so on. For some reason, this seems to attract all kinds of formulaic advice, such as the rule of thirds, the golden section, avoiding the middle at all costs, and so on. In fact, it's entirely shot-specific, meaning that the needs of a particular image and what you're trying to do with it come first.

A distinct horizon is the classic case that landscape photographers face, and there are two basic decisions: the first is what's going on below and above the horizon. Is the sky interesting, could it dominate? What colour or brightness contrast is there between the ground and sky? Questions like these will usually lead you to a natural division, but the second decision can easily override these – how much you want to be conventional, or how much you want to challenge and be different.



The bright red frame of this horse-drawn carriage in Myanmar made it tempting to use a medium telephoto lens and crop in to create a strongly divided image, using the top-right quadrant for the woman

### THE DEAD HAND OF THE RULE OF THIRDS

■ This rather silly (in my opinion) instruction to divide pictures and place subjects exactly a third of the way into the frame still gets trotted out as a way of somehow magically improving the appearance of any photograph. Well, imagine how it would be if all photographs were composed like this. Ridiculous, yes? It was invented by a third-rate 18th century painter, John Thomas Smith, who misinterpreted a comment by Sir Joshua Reynolds, and it has been kept alive since then by people lacking visual imagination. Off-centering a subject is a fine and reasonable thing to do, and can make an image feel more balanced, but there are just as many other situations where dead-centre, or way off near an edge or corner, might be more appropriate. Composition always depends on a combination of the particular situation and how you want to interpret it. Apply a blanket formula at your peril.



Placing the far riverbank almost touching the bottom of the square frame was a device both for anchoring this image of the lower Amazon, and for providing a sense of scale for what is essentially a cloudscape – the tiny trees convey the towering height of the clouds. Placing the horizon always depends on the needs of the individual scene

## KEEP IT ENERGETIC

## GO WITH THE FLOW

Exploiting a sense of direction will usually result in a more dynamic image

The dynamics of an image involve the sense of movement, and how to treat it. This can be literal, such as a figure walking in or out of the frame, or virtual, such as an eye-line from someone looking in a particular direction – or simply a sense of energy from diagonal lines.

With a figure or something that's obviously moving, the viewer's eye anticipates that the direction of movement – the vector, as it's called – will continue, and so assumes it 'will be' further along that trajectory. Placing an entering figure right next to an edge or corner actually reads as less extreme for this reason.

The most dynamic lines are curves and diagonals, because they're very active, with a suggestion of direction and speed that's missing in verticals and horizontals. Most diagonals in photos are the result of viewpoint. They are usually oblique views of



lines that are actually horizontal or vertical, and so are generally under your control. A diagonal can help lead the eye towards something you want the viewer to see. Curves share some of this sense of movement, and also have a progressive change of direction, which can even give a sense of acceleration.



Going against conventional advice to direct the viewer's eye into the frame, this image was made to inject dynamism: the viewer's gaze is pulled outward by the women, then back in

## BE UNCONVENTIONAL

## EXPERIMENT

Don't be afraid to try out new ways of composing a shot

Most people, and that includes your audience, have conventional assumptions. One is that the camera should be level and the horizon horizontal. Another is that everything important should be neatly enclosed inside the frame. This is reasonable and logical, but not necessarily very interesting. Photography is a creative activity, meaning it's about expressing ourselves, having fun and entertaining people. You could, for example, tilt the camera, or cut subjects off at the edges of the frame. Expect more failures than successes when trying these things,

and be prepared for the fact that others may not agree with your creative decisions, but also bear in mind that there's nothing wrong with that! Try these for a start:

- 01** Angle the camera up, down, left, right. Make it suit the subject.
- 02** Tilt the camera to one side. It's unconventional, but a strong choice nevertheless.
- 03** Zoom in or out. It's easy and fast to try, but check the edges for things that cut into them.
- 04** Move physically (zoom makes us lazy). Even small body movements can result in major changes.



A sergeant in the Greek Palace Guard, the Evzones, inspecting the hemline of a soldier. One of a series of images, this one, with just the sergeant's head poking into frame, was by far the most interesting. It shows you don't have to be afraid to cut things off!



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Mount Kailash seen from a viewpoint at over 5,000 metres, where the air is very thin. This, combined with the use of a polarising filter, has resulted in a stark, high-contrast image

## CAPTURING LIGHT

Michael Freeman explains how you can work creatively with natural illumination even when you have no apparent control over the light

**I'm not the first person to say that the quality of light can make or break a shot, and it might be a cliché of photography, but it also happens to be true.** Unless you have a subject in front of you that is so amazing that it wouldn't matter what light it was shot in, the one thing you can do to improve a photograph is to make sure it's attractively or excitingly lit. That in turn means developing a sense of lighting – a conscious appreciation of it – and developing that sense to the point where you know *why* the lighting is the way it is.

When I'm shooting outdoors in unpredictable circumstances, I try to keep in my mind a sort of scale of the importance of the light in front of me. At the lower end of the scale the light is just there. It doesn't matter, I can work with that, but at certain times of day, in particular weather and configurations of street and buildings, the light starts to

take over. It imposes itself on the scene and therefore on the image. At the very top of the scale, the shot is all about the light effects, and the subject can be completely ordinary. Australian Magnum photographer Trent Parke works consistently at the top readings of this notional light barometer, and probably speaks for the hard core of light obsessives when he writes "I am forever chasing light. Light turns the ordinary into the magical."

So we'll take a look at developing a feeling for light and making it a priority most of the time, but also at how to achieve results practically. After all, it's easy to be smug about a stunning shaft of stormlight that you were lucky enough to be in for a crucial view, but what do you do when the lighting is less special and yet you still need to shoot? It calls for a two-handed approach to lighting. One is to have an idea of what lighting might best suit your

subject, then wait it out or return another time. The other is to shift gears and look for subjects that the light you're under is good for.

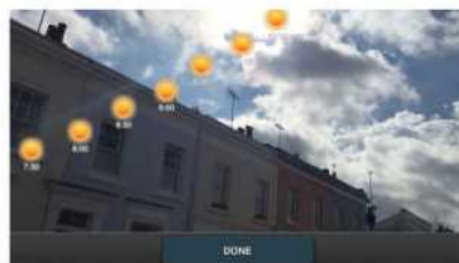
All light can be very good for something. Acclaimed American

photographer Galen Rowell wrote: "I search for perfect light, then hunt for something earthbound to match it with."

It also works with less-than-perfect light – see opposite.

### SUN AND WEATHER APPS

■ If you take light seriously you should stay on top of what it's going to be like in coming days, and for that you need a weather app showing satellite imagery. Use this in conjunction with a sun-position finder. The best of these, like the Helios app shown below, even have a clinometer mode to show you exactly when and where the sun will clear whatever's in front of you.



A sun-position finder like Helios, and a weather app that shows satellite views, both help predict lighting



## FLAT BUT SOFT

## LEARN TO LOVE GREY

Surprisingly perhaps, even classic British grey skies have their place in the roster of lighting, and can be useful

If there were such a thing as a national light, ours might be this: overcast grey, often watered. Partly because it just doesn't feel so good to be out in it physically, and partly because gorgeous golden light is somehow accepted by most people as a kind of deal (see page 158 for more on that), the virtues of soft, enveloping grey light often get overlooked. Its virtues are that it's restrained, and can even be contemplative. If your subject suits a sombre, quiet mood, grey light works well.

In particular, it's very good indeed for colour saturation, especially when you have subtle variations on a single hue. The prime example of this is greenery and gardens. If this

claim seems counter-intuitive, it's because saturation often gets confused with contrast. Sunlight on leaves gives them sparkle, but by creating small highlights and shadows actually reduces the saturation – or colourfulness, if you like. I once shot a book on Japanese gardens, which are generally restricted to a palette of greens, with grey stone, and without a doubt my favourite conditions for shooting were grey, and preferably wet.

One precaution is to keep the sky, or any reflections of it, out of the frame. Land-sky contrast on overcast days is surprisingly high, and unless the clouds are stormy and threatening, the contrast within an image can be troublesome.



The Buddhist temple garden of Ichijo-in, Koya-san, Japan. The typical range of greens appear at their most saturated under soft grey light like this



Mexican architect Ricardo Legoretta designed this house in Los Angeles to take advantage of the dramatic diagonal shadows created by hard Californian light

## HARSH VERDICT

## HIGH CONTRAST MEANS GRAPHIC

At the other extreme from overcast light, flat, hard sunlight creates strong shapes for more geometric compositions

A high, piercing sun flouts all the rules of conventional 'nice' lighting, and sends many photographers running for cover, leaving only mad dogs and Englishmen standing around in it. And yet, it does one thing extremely well from a photographic point of view – it casts strong, hard-edged shadows, and these can be very useful for the kind of composition that plays with graphic and geometric shapes.

Piercingly sunny conditions involve extremely clear air and a high sun, so it's not all that common in the British Isles. The tropics,

however, have a much higher sun during the day, while high mountainous regions have thinner, clearer air (see main image, left).

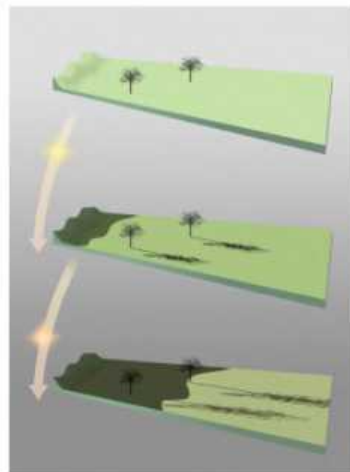
There are a few precautions to take. One is to expose (and process) for the lit areas and keep those shadows almost black so that they register as pure shapes. Opening up the exposure runs the risk of a washed-out light (though admittedly there's nothing to say that this itself can't work as a kind of style). The other is to choose your subject so that you're working with a strong distinctive shape or outline. Angular subjects generally work best.

## PERENNIAL FAVOURITE

## THE GOLD STANDARD

Much loved – perhaps too much – the mellow light at Golden Hour always lives up to photographers' expectations...

...Although those expectations may be a bit too common. A low sun (for the technically minded, around about 20 degrees above the horizon) is a



The lower the sun, the longer the shadows become – but the time passes quickly, so if you see a shot, get it before it's gone

crowd-pleaser, no doubt about it. It works viscerally because anyone looking at it in photographs would quite like to be there physically. The golden colour is inviting.

The low angle of the light in Golden Hour has two conventionally attractive effects on the image. One is that it rakes the surface of a landscape, throwing it into relief with a combination of light and shade. It gives things more definition. The other valuable effect is that it gives you a three-point choice of shooting direction: you can shoot with the sun more or less behind you for punch and richness; with the sun to one side for strong modelling of most subjects; or into the sun for atmosphere, contrast and even silhouettes. It's worth checking your general location for each of these, because it can increase the variety of imagery



Raking light falling on the Canyon de Chelly, Arizona, from an afternoon sun less than 10° above the horizon. Lengthening shadows are all part of the appeal of Golden Light

possible in a short amount of time, which is always a good thing. This, combined with quite often unexpected details catching shafts of light as the sun goes behind buildings, trees and suchlike,

generally keeps photographers very busy. Late afternoons are a little more predictable than early mornings, simply because you have the earlier part of the afternoon to see the way the sun is moving.

## SUBTLE TWILIGHT

## MAGIC HOUR

When the sun is just below the horizon, the light is slightly more nuanced and surprising

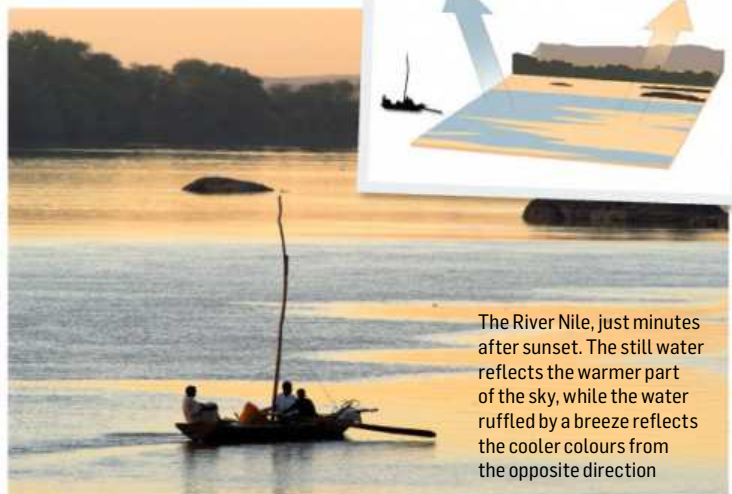
When the sun sets in a clear sky, all the normal dynamics of light change. Gone are shadows and contrast, and the balance between the colour of the light on different sides of the sky suddenly becomes almost even. The result is a short period of time when the light is delicate and shifting. The same happens in reverse before sunrise, so you get two chances a day in good

weather. The term comes from the movie industry, and the most famous film shot entirely during Magic Hour (incredibly expensive to do) was Terrence Malick's *Days of Heaven* in 1978. It's really worth watching that film to see how a great director of photography, Nestor Almendros, used it.

Depending on the latitude, you may not even have one hour, so it's

as well to work quickly and know what you're looking for. Colour is Magic Hour's strong suit, for the reason that there's a subtle but insistent opposition between the warm hues in the direction of the sun and the bluish ones on the other side of the sky. Immediately after sunset, they become more

matched in brightness, so that at some point you have two opposed soft light sources bathing a scene or subject from either side. Look for reflections – bodies of water work particularly well at Magic Hour.



The River Nile, just minutes after sunset. The still water reflects the warmer part of the sky, while the water ruffled by a breeze reflects the cooler colours from the opposite direction

## CHASING LIGHT

Some lighting conditions are so fleeting that you have to move fast to use them. They generally involve limited areas of sunlight, such as when fast-moving breaks in a cloudy sky have patches of sunlight racing across the ground, or when an opening, like a window or a narrow gap between buildings, is a long way from the light falling – this happens in a large cathedral, for example. Probably the ultimate is a rainbow, which of course moves with you for as long as it lasts. In all cases, the trick is to find your viewpoint speedily.



## REMAINS OF THE DAY

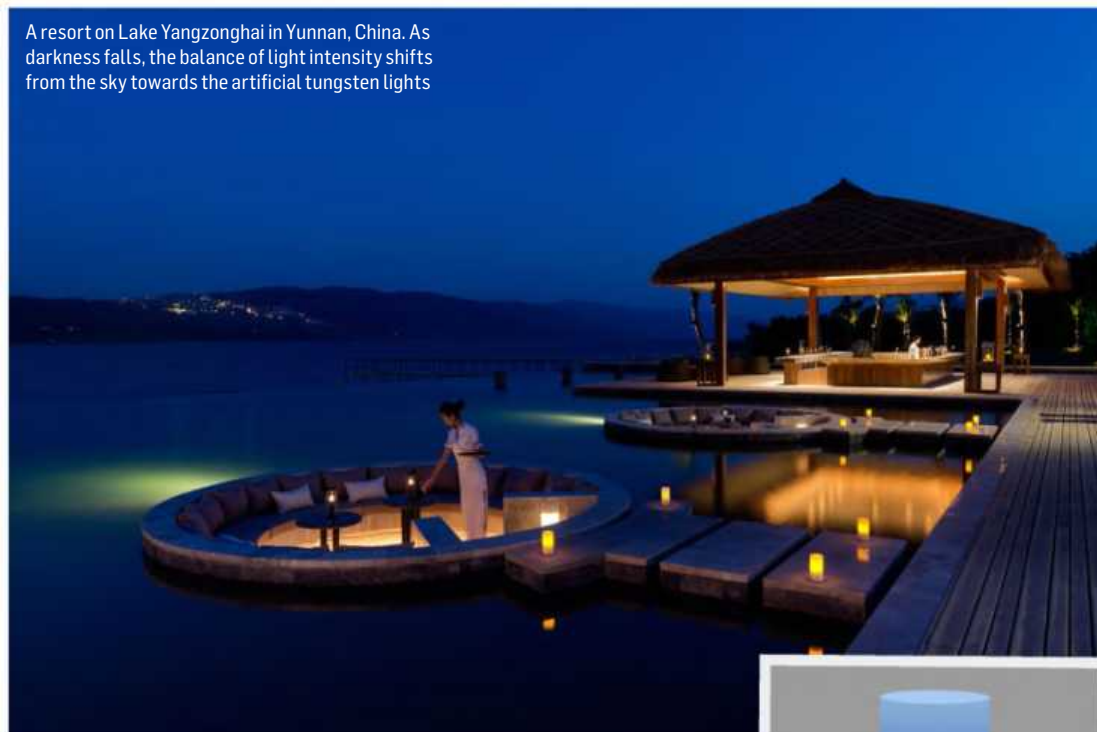
## MOODY BLUES

There's a very short and valuable time-slot at the end of Magic Hour used by architectural photographers

If you feel a bit rushed coping with Magic Hour, just wait until the end of it for the shortest predictable light known to photographers. This is Blue Evening Light, when the sky becomes a rich deep blue, yet still short of black night. If you use it in combination with regular tungsten-lit exteriors or interiors, it delivers a wonderful backdrop and contrast.

This time of day is beloved of architectural photographers and those who photograph hotels and resorts, for two reasons. One is that there's a natural colour complement between the blue of the sky and the orange of the artificial lighting that is automatically pleasing. The other is that the semi-darkness acts like theatrical make-up to conceal blemishes and distractions in

A resort on Lake Yangzonghai in Yunnan, China. As darkness falls, the balance of light intensity shifts from the sky towards the artificial tungsten lights



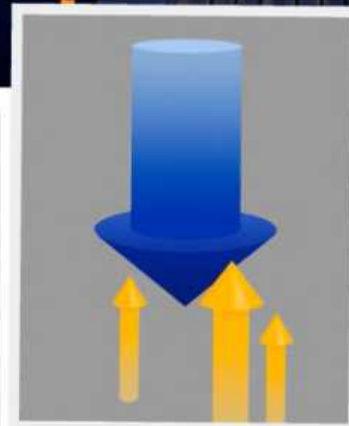
even poorly finished buildings. The problem is that it lasts for minutes only, and creeps up on you almost unawares. Even when you are prepared for it, having chosen your viewpoint and tidied the scene up in front of you, your eyes' clever adaptation to the slowly failing light

can give you a different perception from what the camera sees.

A good rule of thumb is to start paying attention about half an hour after sunset in mid-latitudes, and then begin to use Live View and take some test shots to look at the balance of colours. Use either your camera's Auto mode to cope with the changing light levels, or Manual mode with plenty of wide bracketing. For the richest blue, shoot away from or at right angles to the last remains of the sunset.



Here you can see why the shot at the top right works so well: the orange of the tungsten bulbs perfectly complements the deep blue of dusk, before darkness falls completely



The point at which the deep blue of dusk and the warm orange of tungsten are balanced may only last a few minutes

## HARDWARE AND SOFTWARE

Give the light a little help on location and in post-production

■ You may not have control over the light itself, but you can have a say in how it reaches the camera's sensor. If you shoot portraits, for example, a foldable reflector can be a valuable way of modifying the light, either for lifting shadows or adding a catchlight to hair. The most useful kind come with an assistant attached, so

aren't much use for street photography. If you have one or more assistants to hand, you could also use diffusing panels to soften direct sunlight. Oh yes, and you can use portable flash, if you must.

Next, filters. Once predicted by some to have had their day with the arrival of digital, they are still thoroughly relevant. Grads help to balance the

contrast between sky and land when there's a clear horizon line, while heavy-duty ND filters allow slow-motion water and the blurring of passers-by in daylight. Software helpers include shooting RAW for the extra data you can recover, and 32-bit processing of combined HDR files.



Reflectors like the Lastolite with grip here, and graduated neutral density filters in a variety of strengths and hardnesses, are traditional modifiers of light. The first fills in dark shadows, the second darkens bright skies

# CAPTURING COLOUR

Taking a fresh approach to using colour within photographs, Michael Freeman shows how thoughtful shooting can make it do much more than just deliver a realistic view

**Just as you can promote the quality of light in an image to pole position you can make colour almost the subject itself.** It sounds a straightforward idea, but beware: everyone likes a pretty shaft of light, but colour provokes opinion. We see – experience might be a better word – colour differently from other visual effects. This is not just an off-the-cuff remark; colour is processed in a unique manner in the brain, and affects emotion. It's complex, and depends on culture and memory, but the net result of association and symbolism is that people actually like and dislike colours and the ways they are combined. Decades of paint catalogues and lipstick charts prove something! So, the entire point of this article is to get satisfaction out of shooting in colour by taking different approaches. Not all those mentioned here are suitable for every subject, and it's likely that you'll prefer some to others. That's the reason the American New Colorists who started in the 1970s scorned the rich colours of Ernst Haas, Pete Turner and Jay Maisel, and why some people love – and others can't stand – William Eggleston.

Here, I'm introducing five basic photographic colour styles that are fairly easy to adopt, either for a long-term relationship or to mix and match according to your mood. While most photographers who are colour-minded tend to work around one style by choice, it's perfectly possible to be eclectic, dipping into one or another (I personally like this kind of promiscuity). As you'll see in the next four pages, there's a little more to achieving any colour style than simply keeping your eye out for it as you walk around. Different light, weather, location and even culture play their part in building a colour style. Added to this is your shooting technique, especially your selection of lens and compositional strategies. Telephoto lenses help you to isolate colour choices from a wider scene, while wide-angle lenses help you gather more in. Each has its uses.

**Bright and mixed colours play a role in the Nubian Desert of Sudan, as an antidote to the bleak and colourless surroundings**



## HOW LIGHT AFFECTS COLOUR

In reality, light and colour are inextricable, as light has colour of its own, but the direction and clarity of the latter affect saturation, highlights and shadows, and these in turn affect the style of colour, quite apart from the natural colour of the surfaces, as follows:

■ Rich colours are enhanced by two kinds of light: clear axial light, such

as in clear weather with a low sun behind the camera; and soft, diffuse light from overcast skies.

■ Muted colours stay restrained under soft and shadowless light that keeps the contrast down.

To help avoid shadows weakening colours, compose to keep them small in the frame, and stop down to keep them as dark as possible.

■ Highlights are often more of a problem than shadows for weakening colour; to avoid this either try to keep them small (specular highlights from a single source like a clear sun), or shoot in diffuse light that spreads the area of the light.

■ Dusk in clear weather often turns skies into pastel colours, and these reflect subtly off surfaces.



Highly saturated colours on an old wagon compared with the typical desaturation to pastel that comes with dusk





## LOVE SATURATION

## CAPTURE THE INTENSITY OF RICH COLOUR

You may not have worked with it yourself, but here's why two generations of photographers loved Kodachrome

**Rich colours provide punch, and give a kind of instant gratification, which has its parallels in other sensations such as taste and smell.** They aren't subtle, and most people like them, at least for a while. The term isn't scientific, but photographers and painters understand it. In terms of the Hue, Saturation and Brightness way of looking at colour (see 'The Qualities of Colour', page 163), it means high saturation, but also darker than average. In film-only days, Kodachrome established a well-deserved reputation for rich colours, provided that the film was slightly under-exposed; stopping down a third or half stop (and sometimes even more) was considered standard technique.

To deliver a rich look like the one Kodachrome delivered, you first need inherently saturated colours in the scene, and these are easier to find in some places than in others (see The Colours of Place, page 163). Tropical locations score highly, and the well-known Magnum photographer Alex Webb made something of a trademark out of this with his images of Haiti. In addition to the subject, the conditions you need include either strong sunlight from behind the camera, or diffuse lighting as in shade, and in both cases you must never over-expose. In fact, slight under-exposure helps with richness. Processing these days can and always should complement exposure, and the sliders are all there in the digital darkroom for your consideration. Raising contrast and lowering the black point usually helps the cause. However, raising overall saturation significantly in processing is something you shouldn't ever admit to doing, even to your closest friend. It's too easy and too artificial.

Inherently strong colours painted on a wooden stall in Khartoum, lit more or less frontally by a low, early morning sun – a classic recipe for richness



## APPLY A DELICATE TOUCH

## EXERCISE RESTRAINT WHEN APPROPRIATE

The opposite treatment from rich is the subtle exploration of desaturated hues, considered by some to be more sophisticated

One fundamental disagreement in serious colour photography ('serious' meaning 'worth considering for artistic merit') is between rich and muted. It may sound banal, but this has been taken very seriously in the art world, and it dates back to the 1970s in America when the curator of MoMA, John Szarkowski, set about overhauling the aesthetics of photography. Among his targets was the 'sensationalising' of colour – that very Kodachrome-inspired richness we looked at on page 161. This is how the New Color movement started, and its legacy is a style of shooting that aims for restraint rather than, as one writer put it, "producing extravagantly lush, festive hues from less flamboyant sources."

What this means practically is choosing to work with a limited range of hues, and definitely with less-saturated ones. That may sound like a style based on avoidance, but dealing with it positively really means searching out scenes where the colours are closer together and you're exploring subtle variations. Diffuse light helps, as does any slight thickening of the atmosphere, such as a little mistiness or pouring rain. Of course, to take this seriously you would have to agree with Szarkowski statement: "Most colour photography, in short, has been either formless or pretty."



A Shaker Meeting House, in muted colours because of this historic religious order's insistence on plainness and simplicity, further reduced in saturation by morning mist

## BLUR THE BOUNDARIES

## COLOUR WASHES

Defocusing helps you lose the subject but keep the colours – and sometimes run them together

This is the photographic equivalent of watercolour painting on wet paper, and it calls for little more than throwing colours out of focus. I'm not going to use the b\*\*\*h word, because that's just Japanese for the same thing, but strong optical blur can do useful things with colour, especially when you have different colours adjacent. Blurred flowing colour behind the subject is the most common way of doing this, but something similar is possible with an out-of-focus foreground. In either case, the way to maximise the blur is to use a long focal length and/or a

fast lens, at maximum aperture, with a substantial distance between your selective focus and the blurred colour area. The advantage of shooting for a colour-wash foreground is that it's usually easy to position yourself close to the coloured area, and that will ensure strong defocus. It involves shooting through gaps or around the edges of a colourful subject close to the camera, while focusing on something distant. It also means keeping the blurred colours of the foreground dominant, so this is not a natural shooting technique. You may need to take care with the focus, too.



Shooting through lettering on the glass wall of a street vendor's stall, wide open at a focal length of 200mm, has created a colour wash out of the red and yellow letters

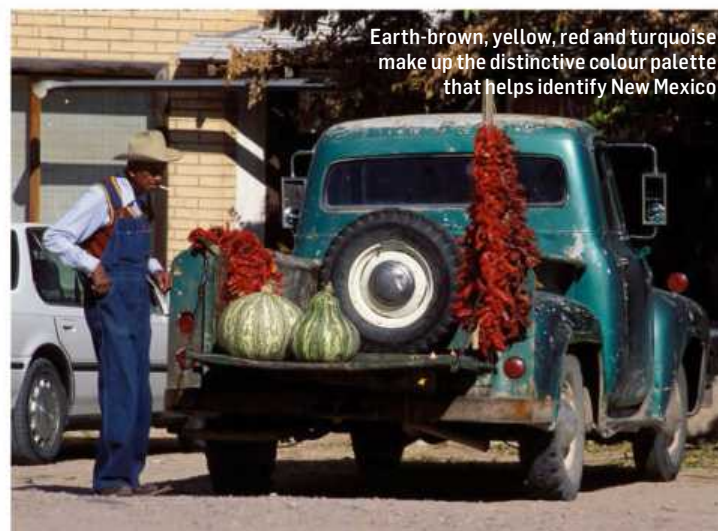


## COLOUR TERROIR

# THE COLOURS OF PLACE

Some cultures and locales have their own, highly individual colour theme that contributes to their specialness visually

One of the ideas promoted strongly in the wine industry is that of *terroir*, the French term that means the combination of aromas and flavours that identify a wine as coming from one specific place and no other. It's not too fanciful to translate this into other ways of identifying the specialness of a particular place, especially its colours. Some are more obvious than others, but it makes for an interesting way of exploring with the camera, to try and identify what the underlying combination of colours is for wherever you've chosen to walk around and shoot. The example here happens to be more distinct than most: New Mexico. Santa Fe and the surrounding area boast a range of earthen colours biased towards ochre and tan (from the desert and the adobe buildings), plus yellow from the cottonwood trees. Added to these are the red of the ubiquitous chilli peppers, and blue-greens inspired by the local turquoise. Try this in a location near you, or when you next travel: whitewashed Greek islands, heather-covered Scottish glens



Earth-brown, yellow, red and turquoise make up the distinctive colour palette that helps identify New Mexico

or blue-green Norwegian fjords. You can assemble a colour palette that describes the landscape (or townscape), light and culture, and with this in mind, you can look for either a set of images each with one colour, or scenes which combine several of them, if you're diligent and lucky.

## CHEAP 'N' CHEERFUL

# SPLASH OUT ON COLOURFULNESS

Different colours placed close together may not be to everyone's taste, but they are definitely eye-catching

The simple idea of being colourful is less easy to manage than many people might think. It means combining different hues in the same frame, and this is where liking and disliking colour really comes into play. Just about everyone has an opinion about which colours go well together, and which clash, and there are many contradictory opinions. Of course, simply framing a shot to include certain colours doesn't mean you approve of them. Clashes can be interesting even if the result looks less than tasteful. In any case, it's a good idea not to get stuck in the rut of always trying to find complementary colours, about which too much has probably been written (and I've added my two cents' worth here – see Tasteful complement, right).



A typical brightly painted (some might say gaudy) Chinese pagoda in Yunnan, abstracted by ripples in Green Lake, and then inverted

# TASTEFUL COMPLEMENT

Complementary colours have a real basis in human vision; they're not just someone's opinion about what makes good taste. Basically, colours opposite each other on the colour circle are perceived as 'going well' together, in other words being unremarkable yet satisfying together. It boils down to red with green, blue with orange and violet with yellow, and variations. JW von Goethe put a gloss on this by promoting the idea that, as colours vary in brightness, even more 'perfect' combinations are possible if you adjust the proportions as follows: red and green 1:1, blue and orange 2:1, violet and yellow 3:1. However, as with all tasteful formulae, such as the Golden Section, just being visually polite isn't going to make a photo better.



On a rooftop garden in Tokyo, sunken lights have a typical tungsten yellow-orange, which complements the blue-violet reflection of a dusk sky in a covering of snow. The three spheres to the right show Goethe's idea of complementary colours also being in proportion to their brightness

# THE QUALITIES OF COLOUR

There are several different ways of defining colour, or models as they're known (such as RGB, which cameras use), but the most intuitive is Hue, Saturation and Brightness. This 3D model, sliced in the middle for a better view, shows the way we generally think about it (when we think about it at all). Hue is what most people mean when they talk about 'a colour', Saturation is its intensity, and Brightness is how dark toward black it is or how light toward white. Every colour in the world is somewhere inside this cylinder.







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# ESSENTIAL KIT

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## WIDE-ANGLE ZOOMS

BROAD  
APPEAL

*Don't take a blinkered approach to your photography. We test eight lenses that'll give you a wider perspective...*

## THE CONTENDERS

- 1 Tamron SP AF 10-24mm f/3.5-4.5 Di II £360, \$500
- 2 Sigma 10-20mm f/3.5 EX DC HSM £400, \$650
- 3 Sigma 8-16mm f/4.5-5.6 DC HSM £520, \$700
- 4 Nikon AF-S DX 10-24mm f/3.5-4.5G ED £640, \$810
- 5 Nikon AF-S 18-35mm f/3.5-4.5G ED £520, \$750
- 6 Sigma 12-24mm f/4.5-5.6 EX DG HSM II £600, \$950
- 7 Nikon AF-S 16-35mm f/4G ED VR £830, \$1260
- 8 Nikon AF-S 14-24mm f/2.8G ED £1320, \$2000



# ESSENTIAL KIT

SLR TECHNIQUES

NIKONSKILLS

CASH WITH YOUR CAMERA

NIKOPEDIA

ESSENTIAL KIT





## EQUIPMENT KNOW-HOW

### FEATURES TO LOOK FOR...

*Make sure your ultra-wide lens ticks all the right boxes*

#### Get shorty

Shorter focal lengths translate into wider viewing angles. For most of us, this is more important than the overall zoom range of a wide-angle lens.

#### Autofocus

All the lenses in this group can autofocus on any Nikon D-SLR body. All have ring-type ultrasonic systems apart from the Tamron, which has an electric motor.

#### Optical stabiliser

This usually isn't fitted to ultra-wide lenses, where camera shake is less of an issue. Only the Nikon 16-35mm lens in this group sports VR (Vibration Reduction).



#### Constant aperture

A constant aperture is useful when using wide apertures in manual shooting mode, as the aperture remains fixed throughout the zoom range.

#### Lens hood

The Nikon 14-24mm, Sigma 8-16mm and Sigma 12-24mm lenses all have fixed, built-in lens hoods. Petal-shaped hoods are supplied with all the other lenses.

#### Weather-sealed mount

All Nikon lenses in the group have a weather-sealed mounting plate. This isn't featured on any of the Sigma or Tamron lenses on test.

**R**aise your camera to your eye when you're taking in a sweeping landscape and a standard zoom lens will only capture a small segment of the vista. Matters get even worse when you're shooting indoors, with your back literally up against the wall, and you still can't squeeze enough into the frame. Switch to a wide-angle zoom, though, and you'll be rewarded with seriously upgraded viewing angles.

Wide-angle lenses designed for DX bodies with APS-C format image sensors typically have a zoom range of 10-20mm or 10-24mm, although the Sigma 8-16mm delivers an even shorter focal length for more extreme wide-angle coverage. There's more variety when it comes to FX-format (full-frame) lenses, with Nikon offering 14-24mm, 16-35mm and 18-35mm lenses, all of which are featured in this round-up; again, Sigma goes wider still with its 12-24mm FX-format lens. For the most part, however, the 1.5x crop factor of DX bodies cancels out the

ultra-wide benefit when mounting an FX wide-angle on a DX camera. You can use a lens like the Nikon 16-35mm (24-52.5mm equivalent) as a 'standard' zoom on these DX cameras, but it only really makes sense if you plan to trade up to an FX body in the future.

All lenses need to produce an image circle large enough to cover the camera's sensor. The exception is circular fisheye lenses, which typically give a 180-degree angle of view in both the horizontal and vertical plane, while creating circular images that only utilise the central region of the sensor. These, as well as diagonal fisheyes that cover the whole sensor and give a narrower angle of view, are also known as 'curvilinear' lenses, and produce extreme barrel distortion. All the lenses in this group are 'rectilinear' lenses, designed to keep distortions to a minimum.

Given that the image circle only needs to be relatively small for a DX-format camera, compared with an FX body, DX wide-angle zooms tend to be physically smaller than

their FX counterparts. However, the diameter of a lens is also governed by how 'fast' it is, in terms of widest available aperture. All the DX-format lenses apart from the Sigma 10-20mm f/3.5 have variable apertures. In the FX camp, the Nikon 14-24mm f/2.8 and 16-35mm f/4 are the two constant-aperture lenses.

All the lenses on test have fully internal focusing systems, so the front element neither extends nor rotates during focusing. This generally makes it easier to use rotation-sensitive filters such as ND grads – ideal for landscapes. However, there's no thread for attaching filters or a filter holder to the Nikon 14-24mm lens, and you can only attach filters to the two Sigma lenses at the long end of their zoom ranges, using their two-part lens caps. To get around this problem of lenses not having a thread, Lee offers a new SW150 Mark II holder, plus individual adaptors to fit a few specific lenses, including the Nikon 14-24mm and Sigma 12-24mm II (£245/\$400).

## JARGON BUSTER

### Viewing angle

■ This is measured in degrees and can be quoted in terms of horizontal, vertical or diagonal viewing angle, relating to the image frame.

### Ring-type ultrasonic

■ Compared with electric or ultrasonic motor-driven autofocus, ring-type ultrasonic systems are generally the fastest and quietest, and offer full-time manual override.



## STEP BY STEP | Consider quality as well as width

Wide apertures can affect the quality of your photographs – and the crop factor restricts your view



### 01 Going wide

As seen in this shot taken with a Nikon 14-24mm lens on a full-frame D810 body, using the widest available aperture on an ultra-wide lens results in some vignetting, and degraded sharpness at the edges and corners of the frame.



### 02 Stopping down

Switching to a mid-range aperture of f/8 to f/11 usually increases sharpness across the frame, especially into the corners, as well as reducing vignetting and increasing the depth of field, so you can retain sharpness in near and far areas.



### 03 Cropping in

When using the 14-24mm lens at its shortest focal length on a DX body, the 1.5x crop factor reduces the angle of view (equivalent to a 21mm lens on an FX body). This also reduces distortion, as it only uses the centre of the image circle.

## 10 things to watch out for

Make the most of expanded viewing angles – and avoid the pitfalls associated with wide-angle shooting

### 1 Big difference

A couple of millimetres difference in focal length at the short end of the zoom range can make a big difference in terms of viewing angle.

### 2 Leaning towers

Tilting the camera slightly upwards can make the sides of buildings look like they're leaning inwards alarmingly.

### 3 Exaggerated view

Get in close to a subject with a wide-angle lens and you can really exaggerate perspective for creative effect.

### 4 Ghost buster

For lenses that don't feature a built-in hood, it's generally a good idea to fit one. It can reduce ghosting and flare,



and will help to protect the often-bulbous front element.

### 5 Poles apart

Polarising filters don't tend to work very well with ultra-wide lenses; due to the large viewing angle, the strength of the effect varies across the frame.

### 6 Straight and true

When used at their mid-to-long zoom settings, the viewing angle of a wide lens will be similar to that of a standard zoom at its widest setting, but typically with much less distortion.

### 7 Mind your feet

Take care to keep your feet out of the shot, particularly when you're shooting in portrait orientation. Using the camera at arm's length in Live View mode helps to avoid capturing your toes.

### 8 The sky's the limit

Capturing big, dramatic skies is part of the appeal of wide-angle photography, but note that you may need to dial in some negative exposure compensation to avoid blown highlights.

### HOW WE DO OUR TESTS...

## REAL WORLD MEETS LAB

We combine rigorous lab tests with real-world shooting for the most accurate results possible

■ To test real-world performance, we use all the lenses in wide-ranging lighting conditions on a variety of different camera bodies. We check for good build quality and handling, and smooth and precise operation of zoom and focus rings, and test the effectiveness and accuracy of autofocus.

We also run a full range of lab tests under controlled conditions, using the Imatest Master suite. Photos of test

charts are taken across the range of apertures and focal lengths, and analysed for sharpness, distortion and chromatic aberrations (colour fringing). A summary of these results is shown towards the end of the group test, but we also take data from a wider range of apertures and zoom settings into consideration. Finally, we combine the lab tests and real-world shooting results to give overall ratings.

### 9 Panoramic crop

You can simulate a panoramic effect by shooting with a wide lens and cropping the image horizontally.

### 10 Hyperfocal distance

It's theoretically possible to calculate the hyperfocal distance, and set this using a lens's distance scale, for maximising depth of field. In practice, it's usually easier to focus on a point a third of the way into the scene.





## Tamron SP AF 10-24mm f/3.5-4.5 Di II £360, \$500

*With a generous zoom range for a DX-format lens, this Tamron is also the cheapest lens on test*

When it was first launched, the Tamron 10-24mm boasted the biggest zoom range of any DX-format wide-angle lens on the market. It's since been matched by Nikon's latest offering, also on test, although the Nikon is considerably more expensive. The Tamron is exactly the same size as the Nikon and has the same 77mm filter thread, but it has fewer elements, and is significantly lighter at 406g compared to 460g.

The Tamron feels reasonably solid, and includes two LD (Low Dispersion) glass elements to reduce chromatic aberration, as well as internal coatings to combat ghosting and flare. The

basic electric motor is a little on the sluggish side, and the focus ring rotates during autofocus, which can impair handling. Unlike some older Tamron lenses, though, at least it has an autofocus motor built in, so the lens can autofocus on any Nikon D-SLR body.

### Performance

There's a distinct lack of sharpness towards the edges and corners of the image frame, but centre sharpness is pretty good at the short end of the zoom range. Our test sample produced frequent overexposure errors and a green colour cast, compared with all the other lenses in the group.



This shot required -0.67 stops of exposure compensation to avoid blowing the sky

### NPhoto VERDICT

FEATURES	★★★★☆
BUILD QUALITY	★★★★☆
IMAGE QUALITY	★★★☆☆
VALUE FOR MONEY	★★★★☆

### OVERALL ★★★★★

**WE SAY...** The least expensive lens on test, but image quality suffers.



## Sigma 10-20mm f/3.5 EX DC HSM £400, \$650

*The Sigma is the only constant-aperture DX-format lens on test, and it's very competitively priced*

Only a little more expensive than the Tamron lens on test (in the UK, at least), the Sigma loses a little in relative zoom range but retains the same 10mm shortest focal length. It's also a step up in sophistication, featuring a ring-type ultrasonic autofocus system with the usual full-time manual override.

The widest aperture isn't particularly 'fast' at f/3.5, but it is constant, which makes it about an f/stop faster than competing DX-format wide-angles at the long end of the zoom range. A consequence of this is that the front element has a greater diameter than either the Nikon and Tamron

10-24mm lenses, and so the filter thread is larger at 82mm instead of 77mm. The Sigma is also a little heavier, at 520g. The optical design utilises one SLD (Special Low Dispersion) and two ELD (Extraordinary Low Dispersion) elements.

### Performance

As such, sharpness is maintained quite well into the extreme corners of images, but outright values aren't particularly impressive at any focal length or aperture setting.



Image quality is very good, with sharpness preserved well into the corners

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

### OVERALL ★★★★★

**WE SAY...** It's a sophisticated and well-built lens that's superb value.







## Sigma 8-16mm f/4.5-5.6 DC HSM

£520, \$700



*Unless you want to go fisheye, this Sigma is as wide as it gets for a DX lens – and it really is wide*

The stand-out feature of this lens is its astonishing maximum angle of view, which equals no less than 121 degrees on the diagonal, compared with about 110 degrees for the other DX-format lenses on test. Put your eye to the viewfinder and you'll be hit with an instant 'wow' factor; the trade-off is that the long end of the zoom range falls fairly short compared with competing lenses.

It's physically the longest and heaviest of the DX-format lenses on test, at 75x106mm and 555g, but part of the reason for the extra length is that the petal-shaped lens hood is built into the barrel, as with the FX-format Nikon 14-24mm and

Sigma 12-24mm lenses. This means there's no attachment thread for using filters, but the two-part lens cap does have a slip-on section with a 72mm thread. You can only use this at the long end of the zoom range, though, otherwise you'll encounter extreme vignetting.

### Performance

Making the most of four top-grade FLD (Fluorite-level Low Dispersion) elements and one SLD element, the lens delivers very good sharpness while keeping colour fringing to fairly low levels. Distortions are also quite restrained, given the extraordinary maximum viewing angle.



Image quality is very good in all respects, despite the extreme viewing angle

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

**OVERALL** ★★★★★

**WE SAY...** If you want maxed-out DX viewing angles, look no further.



## Nikon AF-S DX 10-24mm f/3.5-4.5G ED

£640, \$810

*The latest Nikon DX-format wide-angle zoom goes larger in both viewing angle and zoom range*

This is the second wide-angle zoom for DX cameras that Nikon has brought to the market. It follows on from the 12-24mm f/4, which is relatively pricey at £840 (\$1100) but boasts a constant-aperture design. We prefer the greater viewing angle of this newer 10-24mm lens and, when we tested both lenses head-to-head, the 10-24mm has won out for image quality.

Highlights include ring-type ultrasonic autofocus, with a distance scale smartly stashed beneath a viewing window (the Sigma lenses also have these refinements). The Nikon also has a weather seal on its mounting plate, unique among

DX-format lenses in this test group. The design features two ED (Extra-low Dispersion) elements, and a total of 14 elements in nine groups. The widest available aperture shrinks from f/3.5 to f/4.5 as you zoom in, as with the Tamron 10-24mm.

### Performance

Handling is good, but image quality is uninspiring. It loses out to the relatively inexpensive Tamron for centre sharpness at the short end of the zoom range, although sharpness is better preserved in image corners. Colour fringing is a bit on the high side, and barrel distortion at 10mm is quite pronounced.



Good but not great. Sharpness, distortions and colour fringing could all be better

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

**OVERALL** ★★★★★

**WE SAY...** Refined handling, but let down by mediocre image quality.



ESSENTIAL KIT



Nikon AF-S 18-35mm  
f/3.5-4.5G ED £520, \$750

*Nikon's 18-35mm offering is remarkably compact, light and inexpensive for an FX-format wide-angle*

It's not often that we can say an own-brand Nikon-fit lens is the least expensive in its class, but the 18-35mm undercuts all third-party FX-format wide-angle zooms on the market. At least that's the case in Europe, although you might find a Tokina one for less than the price of this lens in other regions. Even so, despite being an FX-format lens for full-frame bodies, it's both cheaper and lighter than Nikon's own 10-24mm DX lens, weighing just 385g compared to 460g.

The design features two ED elements and Nikon's Super Integrated Coating for combating chromatic

aberration, ghosting and flare. Like all other Nikon lenses on test, it also has a weather seal on the mounting plate and features ring-type ultrasonic autofocus. Unlike the other two Nikon FX lenses on test, however, it has a diaphragm with seven rather than nine blades, but this is nevertheless quite well-rounded.

Performance

There's less barrel distortion at the wider angles than with any other FX lens on test, but then again, the maximum angle of view is much narrower, at a disappointing 100 degrees. Corner sharpness at the widest setting could be better.



Image quality is pretty good, but there's a slight lack of corner sharpness at 18mm

NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

OVERALL ★★★★★

WE SAY... Small and light, but with a relatively meagre angle of view.



Sigma 12-24mm f/4.5-5.6  
EX DG HSM II £600, \$950



*A massive lens in terms of maximum viewing angle, yet lightweight and compact with it*

Considerably smaller and lighter than the Nikon 14-24mm FX lens on test, this Sigma 12-24mm wins the viewing-angle battle hands down, with its astonishing 122 degrees compared to the Nikon's 114 degrees. In terms of design it's essentially an FX version of the Sigma 8-16mm DX-format lens. Similarities between the two include a two-part lens cap, which can be used at the longest zoom setting for attaching filters, this time with a larger 82mm thread.

Another feature shared by both ultra-wide Sigma lenses is that they feature one SLD and four FLD elements, the latter of which are claimed to

equal top-grade fluorite glass in performance. Handling and build quality both feel very good and the price is certainly competitive, especially in the UK, where the FX lens is only a little more expensive than its smaller DX counterpart.

Performance

In the lab, we found that levels of sharpness are almost as good as with the more expensive Nikon lenses, while barrel distortion at the 12mm zoom setting is actually of a lower order than the Nikon 16-35mm lens, despite the Sigma's much greater viewing angle. However, colour fringing at 12mm is the worst of all the lenses on test.



Despite the monster viewing angle, barrel distortion is fairly well restrained

NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

OVERALL ★★★★★

WE SAY... Extreme viewing angles at a far-from-extreme price.





## Nikon AF-S 16-35mm f/4G ED VR £830, \$1260

*Uniquely in this group of wide-angle zoom lenses, the Nikon 16-35mm includes image stabilisation*

Optical stabilisation is a rarity in wide-angle lenses, mainly because you can get away with fairly slow shutter speeds without suffering the effects of camera shake. Even so, Nikon's VR II (Vibration Reduction) technology is fitted to this lens, enabling a further 2.5-stop reduction in shutter speeds for handheld shooting. It's a bonus for things like street photography, candid shooting and other occasions where you can't use a tripod.

Bigger and heavier than the Nikon 18-35mm lens that's also on test, this one has a more complex construction based on 17 rather than 12 elements, and weighs 685g instead of 385g. It's

also 30mm longer than its rival at 125mm, but has the same 77mm filter thread. And as with the 18-35mm lens, two ED elements are fitted, but this lens gets an upgrade to Nano Crystal coatings for more effectively banishing ghosting and flare.

### Performance

Centre sharpness is a little better than from the Nikon 18-35mm lens at short-to-mid zoom settings, but a little worse at the long end; however, there's a noticeable improvement in corner sharpness. The only slight disappointment is that, at its shortest zoom setting, barrel distortion is the worst of any lens in the group.



Sharpness is retained into the corners of images better than with Nikon's 18-35mm

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

**OVERALL** ★★★★★

**WE SAY...** Good performance, and a useful maximum viewing angle.



## Nikon AF-S 14-24mm f/2.8G ED £1320, \$2000

*From size to performance, this professional-level lens is a real heavyweight in every respect*

Weighing nearly a kilogram and measuring 98x132mm, this is the biggest and heaviest lens in the group, by quite a margin – the two main contributing factors are that it combines a fast, constant aperture of f/2.8 with an ultra-wide maximum viewing angle of 114 degrees. It therefore comes the closest to the Sigma 12-24mm for angle of view, while also being a stop faster at the short end of the zoom range, and two stops faster at the long end.

The solid and high-precision build feels every bit as good as you'd expect from a fully professional-level lens. Two ED elements and Nano Crystal

coatings are incorporated, although, without an image stabiliser, there are fewer elements than in the Nikon 16-35mm lens on test. As with the Sigma 8-16mm and 12-24mm lenses, the lens hood is built in, and helps to protect the very large and bulbous front element.

### Performance

The front element comes very close to the leading edge of the hood when the lens is zoomed out to 14mm. Even so, the lens is remarkably resistant to ghosting and flare, while distortions are also well controlled, especially given the enormous maximum viewing angle. Image quality is simply superb.



Image quality is excellent in every respect, throughout the zoom range

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

**OVERALL** ★★★★★

**WE SAY...** A quite stunning lens, but it's heavy in both build and price.

# IMAGE QUALITY IN FOCUS

Here's how the ultra-wide lenses compare in detail, as revealed in our lab tests



**Tamron SP AF 10-24mm  
f/3.5-4.5 Di II**



**Sigma 10-20mm  
f/3.5 EX DC HSM**



**Sigma 8-16mm  
f/4.5-5.6 DC HSM**



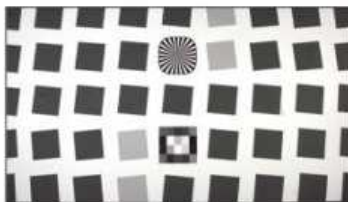
**Nikon AF-S DX 10-24mm  
f/3.5-4.5G ED**

## SHARPNESS



Centre sharpness falls off as you move through the zoom range, and is poor towards edges and corners throughout.

LAB TEST	
Centre sharpness at short	1894
Centre sharpness at mid	1726
Centre sharpness at long	1487



Not massively sharp at wide-to-mid zoom settings, but sharpness is at least fairly consistent across the image frame.

LAB TEST	
Centre sharpness at short	1629
Centre sharpness at mid	1648
Centre sharpness at long	1811



Along with its extraordinary maximum viewing angle, the Sigma 8-16mm delivers very good sharpness across the frame.

LAB TEST	
Centre sharpness at short	2049
Centre sharpness at mid	1937
Centre sharpness at long	2068



Trails the Sigma 8-16mm for overall sharpness, and the cheaper Tamron for centre sharpness at short zoom settings.

LAB TEST	
Centre sharpness at short	1806
Centre sharpness at mid	1703
Centre sharpness at long	1720

## FRINGING



Levels of colour fringing are among the worst in the group, especially at the short end of the zoom range.

LAB TEST	
Fringing at short	4.29
Fringing at mid	2.28
Fringing at long	1.77



Colour fringing is average at either end of the zoom range, but worse than most competitors at mid-range settings.

LAB TEST	
Fringing at short	2.26
Fringing at mid	2.86
Fringing at long	1.66



At its shortest zoom setting, fringing is a little on the high side towards the extreme corners of the image frame.

LAB TEST	
Fringing at short	2.84
Fringing at mid	1.04
Fringing at long	1.47



Fringing at the short end of the zoom range is more pronounced than from either of the Sigma DX-format lenses.

LAB TEST	
Fringing at short	3.89
Fringing at mid	2.67
Fringing at long	1.29

## DISTORTION



Barrel distortion is noticeable throughout the zoom range, but it's not overly bad even at the shortest setting.

LAB TEST	
Distortion at short	-2.85
Distortion at mid	-2.35
Distortion at long	-1.55



Distortions are well controlled through the zoom range, running from restrained barrel to a little pincushion distortion.

LAB TEST	
Distortion at short	-2.28
Distortion at mid	-0.2
Distortion at long	1.01



There's obvious barrel distortion at the widest focal length, but distortions are minimal at mid-to-long zoom settings.

LAB TEST	
Distortion at short	-4.79
Distortion at mid	-0.47
Distortion at long	0.36



Barrel distortion at the 10mm focal length is noticeably worse than with any of the other DX-format lenses on test.

LAB TEST	
Distortion at short	-4.37
Distortion at mid	-0.7
Distortion at long	0.7

### IMAGE QUALITY VERDICT

Overexposure and a green colour cast occurred quite frequently, degrading the Tamron's overall image quality.



### IMAGE QUALITY VERDICT

A little less sharp than perhaps it could be, but overall image quality is nevertheless very good.



### IMAGE QUALITY VERDICT

Incredible viewing angles with no compromise on image quality, making it an attractive buy and fun to use.



### IMAGE QUALITY VERDICT

Overall quality is rather disappointing, especially given that it's the most expensive DX-format lens in the group.





## The tests explained!

We test lenses to their limits in three key areas of optical performance – sharpness, colour fringing and distortion



■ **Sharpness (high scores are better)**  
Figures are based on the Imatest SFRPlus chart. To ensure a level playing field, centre, mid and edge sharpness was checked (DX on a D7200, FX on a D600).



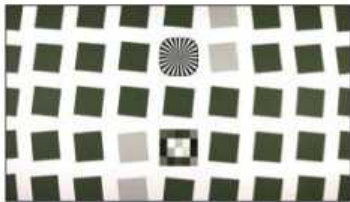
■ **Fringing (low scores are better)**  
Colour fringing tends to be worst at the corners of the frame. To highlight how fringing effects each lens the Imatest SFRPlus chart was shot.



■ **Distortion (close to 0 is best)**  
Distortions are a common trait of wide-angle lenses, especially barrel distortion. Each lens was tested at its widest focal length.



**Nikon AF-S 18-35mm f/3.5-4.5G ED**



■ Centre sharpness is impressive, but drops off quite a bit towards the corners at the short end of the zoom range.

LAB TEST	
Centre sharpness at short	<b>2052</b>
Centre sharpness at mid	<b>2031</b>
Centre sharpness at long	<b>2122</b>



■ This lens does well to control colour fringing. Lab scores are better than average at all available zoom settings.

LAB TEST	
Fringing at short	<b>1.62</b>
Fringing at mid	<b>1.27</b>
Fringing at long	<b>1.54</b>



■ Barrel distortion remains in evidence throughout the zoom range, gradually reducing towards the long end.

LAB TEST	
Distortion at short	<b>-3.67</b>
Distortion at mid	<b>-1.93</b>
Distortion at long	<b>-1.59</b>

### IMAGE QUALITY VERDICT

This budget FX-format lens delivers pleasing image quality, but comes up short on maximum viewing angle.



**Sigma 12-24mm f/4.5-5.6 EX DG HSM II**



■ Almost as sharp as the best Nikon FX-format lenses on test, while delivering a stunning maximum viewing angle.

LAB TEST	
Centre sharpness at short	<b>2051</b>
Centre sharpness at mid	<b>2049</b>
Centre sharpness at long	<b>2011</b>



■ More fringing at the short end of the zoom range than with any other lens on test, including Sigma's 8-16mm DX lens.

LAB TEST	
Fringing at short	<b>5.6</b>
Fringing at mid	<b>2.41</b>
Fringing at long	<b>1.36</b>



■ Less barrel distortion at short settings than with the Nikon 16-35mm, despite the Sigma's much wider viewing angle.

LAB TEST	
Distortion at short	<b>-5.22</b>
Distortion at mid	<b>-0.36</b>
Distortion at long	<b>1.07</b>

### IMAGE QUALITY VERDICT

Like Sigma's 8-16mm DX-format lens, its full-frame lens boasts great image quality and an extreme viewing angle.



**Nikon AF-S 16-35mm f/4G ED VR**



■ Sharpness is very good overall, without the Nikon 18-35mm's drop-off in corner sharpness at shorter zoom settings.

LAB TEST	
Centre sharpness at short	<b>2187</b>
Centre sharpness at mid	<b>2109</b>
Centre sharpness at long	<b>2081</b>



■ There's very little colour fringing at either end of the zoom range, although it peaks a little at mid-range settings.

LAB TEST	
Fringing at short	<b>1.13</b>
Fringing at mid	<b>1.91</b>
Fringing at long	<b>1.25</b>



■ There's practically no distortion at mid-range zoom settings, but barrel distortion is the worst in the group at the short end.

LAB TEST	
Distortion at short	<b>-5.51</b>
Distortion at mid	<b>-0.04</b>
Distortion at long	<b>1.21</b>

### IMAGE QUALITY VERDICT

Overall, it delivers excellent image quality, marred only by noticeable barrel distortion at 16mm.



**Nikon AF-S 14-24mm f/2.8G ED**



■ For such an extremely wide-angle lens, sharpness is excellent throughout the zoom range and across the image frame.

LAB TEST	
Centre sharpness at short	<b>2185</b>
Centre sharpness at mid	<b>2293</b>
Centre sharpness at long	<b>2243</b>



■ Fringing can be evident towards image corners, mostly at the 12mm setting, but it beats the Sigma 12-24mm by far.

LAB TEST	
Fringing at short	<b>2.29</b>
Fringing at mid	<b>1.06</b>
Fringing at long	<b>1.35</b>



■ Less barrel distortion at 16mm than with the Nikon 16-35mm, which is a real achievement for such a wide lens.

LAB TEST	
Distortion at short	<b>-5.23</b>
Distortion at mid	<b>-1.37</b>
Distortion at long	<b>-0.63</b>

### IMAGE QUALITY VERDICT

This premium lens delivers superb image quality throughout its entire zoom and aperture ranges.



SHARPNESS

FRINGING

DISTORTION



## COMPARISON TABLE

HOW THE LENSES COMPARE								
NAME	Tamron SP AF 10-24mm f/3.5-4.5 Di II	Sigma 10-20mm f/3.5 EX DC HSM	Sigma 8-16mm f/4.5-5.6 DC HSM	Nikon AF-S 10-24mm f/3.5-4.5G	Nikon AF-S 18-35mm f/3.5-4.5G ED	Sigma 12-24mm f/4.5-5.6 DG HSM II	Nikon AF-S 16-35mm f/4G ED VR	Nikon AF-S 14-24mm f/2.8G ED
WEBSITE	www.tamron.com	www.sigmaphoto.com	www.sigmaphoto.com	www.nikon.com	www.nikon.com	www.sigmaphoto.com	www.nikon.com	www.nikon.com
STREET PRICE	£360, \$500	£400, \$650	£520, \$700	£640, \$810	£520, \$750	£600, \$950	£830, \$1260	£1320, \$2000
DX OR FX	DX	DX	DX	DX	FX	FX	FX	FX
MINIMUM FOCUS DISTANCE	24cm	24cm	24cm	24cm	28cm	28cm	28cm	28cm
MINIMUM APERTURE	f/22-29	f/22	f/22-29	f/22-29	f/22-29	f/22-29	f/22	f/22
ANGLE OF VIEW (DIAGONAL)	109-60 degrees	110-71 degrees	121-83 degrees	109-61 degrees	100-63 degrees	122-84 degrees	107-63 degrees	114-84 degrees
AUTOFOCUS MOTOR TYPE	Electric motor	Ultrasonic (ring)	Ultrasonic (ring)	Ultrasonic (ring)	Ultrasonic (ring)	Ultrasonic (ring)	Ultrasonic (ring)	Ultrasonic (ring)
INTERNAL FOCUS / STABILISER	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / Yes	Yes / No
ELEMENTS/GROUPS	12 / 9	13 / 10	15 / 11	14 / 9	12 / 8	17 / 13	17 / 12	14 / 11
DIAPHRAGM BLADES	7	7	7	7	7	6	9	9
FILTER SIZE	77mm	82mm	72mm (slip-on)	77mm	77mm	82mm (slip-on)	77mm	None
LENS HOOD	Included	Included	Built-in	Included	Included	Built-in	Included	Built-in
SIZE (DIAMETER x LENGTH)	83x87mm	87x88mm	75x106mm	83x87mm	83x95mm	87x120mm	83x125mm	98x132mm
WEIGHT	406g	520g	555g	460g	385g	670g	685g	970g
FEATURES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BUILD QUALITY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
IMAGE QUALITY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
VALUE FOR MONEY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

## THE WINNER IS...

### Nikon AF-S 14-24mm f/2.8G ED

*Pro-standard build quality combined with best-in-class performance*



Super-sharp across the whole image frame, and with an amazingly wide maximum viewing angle, the Nikon 14-24mm is a fabulous lens for FX-format cameras. The wide and constant f/2.8 aperture is a bonus, as is the blisteringly fast autofocus. However, if you want to take your viewing angles as far as technically possible, the much less expensive Sigma 8-16mm and 12-24mm lenses are excellent value, for DX and FX cameras respectively.

The Nikon 16-35mm is another excellent but pricey lens, and it's the only one in the group to boast image stabilisation. Nikon's 18-35mm is much cheaper, but has a

relatively limiting maximum viewing angle. Meanwhile, the Sigma 10-20mm offers the best performance for DX shooters on a budget, whereas the Nikon 10-24mm is comparatively poor value. ■

**What's good:** Class-leading image quality; robust build; super-fast autofocus.

**What's bad:** Very expensive and quite heavy; needs a lens-specific filter holder if you want to use filters.

**Our verdict:** It's the best ultra-wide zoom lens on the market for FX-format bodies.

**OVERALL** ★★★★★

## Top runners-up

### Sigma 8-16mm f/4.5-5.6 DC HSM/ Sigma 12-24mm f/4.5-5.6 DG HSM II

**What's good:** Supremely wide maximum viewing angle, very good image quality.

**What's bad:** As with the Nikon 14-24mm, the built-in hood makes it hard to use filters.

**Our verdict:** Superb for DX and FX bodies respectively, and they're great value as well.



### Sigma 10-20mm f/3.5 EX DC HSM

**What's good:** Good image quality, refined handling, constant-aperture design.

**What's bad:** Could be a little sharper at the short end of the zoom range.

**Our verdict:** It's essentially as good as the Nikon 10-24mm, but much better value.



### Nikon AF-S 16-35mm f/4G ED VR

**What's good:** Premium build and image quality, effective VR stabilisation.

**What's bad:** Barrel distortion is the worst of any lens on test at its shortest focal length.

**Our verdict:** It's a lovely lens, but much pricier than the Nikon 18-35mm.





# Photography week

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<http://tiny.cc/bz3xkx>



## ENTHUSIAST SLRS

# Feed your passion

There's plenty to get enthusiastic about in Nikon's current D-SLR line-up. We pick out the best cameras for more experienced photographers

**N**ikon SLRs just keep getting better, and the range of cameras to suit enthusiast photographers is now wider than ever. It includes bodies with either DX (APS-C) or FX (full-frame) image sensors which are ideally suited to different needs and requirements. Typically, DX bodies tend to be smaller and lighter than their FX counterparts, and the 1.5x focal length magnifier or 'crop factor' enables enormous telephoto reach without having to use big and hefty super-telephoto lenses. FX bodies are pricier, but enable a shallower depth of field, making them ideal for portraiture and still-life photography. Conventionally, they also enable greater suppression of image noise when shooting at high ISO settings under low-light conditions.

All five cameras in this test have been launched within the last couple of years. The FX-format D610, announced in October 2013, is the oldest. It's a fairly modest refresh of the older D600, and is the only camera in the group to feature an EXPEED 3 image processor. All the others have the latest-generation EXPEED 4 processor and, in keeping with Nikon's continued commitment to high-end DX-format cameras, the D7200 (launched in March 2015) is the newest of them all.

All the cameras on test have a pixel count of just over 24 megapixels, apart from the D810, which really pushes the envelope at 36.3 megapixels. Even so, there are some significant differences between all of these cameras, so let's see how they compare and perform.





## THE CONTENDERS

- 1 Nikon D5500 £560, \$750
- 2 Nikon D7200 £850, \$1200
- 3 Nikon D610 £1185, \$1500
- 4 Nikon D750 £1500, \$2000
- 5 Nikon D810 £2350, \$3000



## Nikon D5500 Key facts

### Image sensor and processing

The 24.2 megapixel count of the image sensor and EXPEED 4 image processor are identical to those of the D7200. Also, 12-bit and 14-bit colour depth options are available for RAW files, but the D5500 lacks the D7200's compression options.

### Autofocus

Like the D610, the D5500 has a 39-point rather than 51-point autofocus system, based on the Multi-CAM 4800 module. It's a better fit in the D5500, as the autofocus points spread out to fill a much greater area of the image frame. Nine of the points are cross-type.

### Continuous shooting

The maximum burst rate of five frames per second is pretty brisk for a relatively inexpensive camera. It actually matches the D810 for continuous drive speed. The RAW buffer depth is 10 to 14 shots, depending on whether you choose 14-bit or 12-bit colour depth.

### Metering sensor

Metering is based on the time-honoured 3D Colour Matrix II module with 2016 pixels. It's essentially the same system that's used in the D7200 and D610, and is reasonably consistent, although the D5500 sometimes produces rather lighter images than the D7200.

### Construction

Like the D750, the D5500 is based on a monocoque construction, in which the main body shell is moulded from a single piece of material. In this case, the material used is carbon-fibre composite, which is very light yet enables a reassuringly rigid-feeling build.

### Need to know

On paper, the D5500 is only 6mm thinner than the preceding D5300. However, apart from the distance between the lens mount and the rear of the body, and the front of the finger grip, it is much slimmer and lighter. It retains the D5300's built-in Wi-Fi but ditches the latter's GPS facility.



# Nikon D5500



*Ultra-lightweight and compact, the D5500 is also the only camera in Nikon's enthusiast range with a touch-sensitive LCD*

**DX-FORMAT D-SLR** £560, \$750 (body only) ▶ [www.nikon.com](http://www.nikon.com)

**A**nounced a couple of months before the D7200, in January 2015, the D5500 is the smallest and lightest camera on test. It's slimmer than the D7200, and weighs just 470 grams.

At first glance, it doesn't look like an 'enthusiast' SLR. Several features that you'd usually find on Nikon's upmarket bodies are absent: there's no top-panel info LCD, no sub-command dial in front of the shutter-release button, and no left-hand bank of control buttons at the rear. However, while these omissions would typically slow down the process of making creative adjustments to settings, the D5500 compensates with an intuitive touch-sensitive screen.

The D5500 is also the only camera on test on which the

rear screen is fully articulated. It's excellent for Live View shooting from creative angles, as well as for putting yourself in the picture for self-portraits. The lack of the left-hand rear button bank is a small price to pay.

### Performance

The D5500 certainly isn't small when it comes to megapixel count, where it pretty much

matches all the other cameras in the group apart from the D810. Image quality is often a close match to that of the D7200, although metering sometimes errs on the bright side, making pictures look less rich. Image noise is controlled well at high ISOs, but at the expense of fine detail, especially when compared with the FX-format cameras in the group.



Metering can sometimes give rise to overly light, slightly unsaturated images

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

### OVERALL ★★★★★

**WE SAY...** Lacks some features, but the touchscreen is very useful.



## The D5500 at a glance

### Shutter release

The shutter release button is entirely conventional, and unlike on most of Nikon's enthusiast-level SLRs, there is no sub-command dial in front of it.

### Drive mode button

The drive mode button is unconventionally placed near the bottom of the front panel, and the usual AF selection button is missing.

### Shooting mode dial

As on the D7200 and D750, the shooting mode dial avoids clutter by grouping banks of Scene and Effects modes together.

### Skinny build

The monocoque (one-piece) shell is remarkably slim-line and enables a deeply sculpted finger grip.

### Viewfinder

Unlike all other cameras in the group, the D5500 features a pentamirror viewfinder, without 100 per cent frame coverage, but at least it gives a reasonably bright view.

### Touch-sensitive rear LCD

The D5500 is the first Nikon SLR to feature a touch-sensitive screen, and it's also the only one in the group with full vari-angle articulation.

### Flash and Fn

Towards the top of the front panel are a pop-up flash activation/flash mode button, and a customisable function button.

### Live View latch

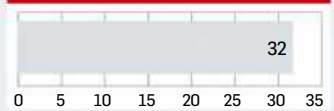
The D5500 is the only camera in the group to feature a Live View lever on the top panel of the camera.

### i button

The interactive touchscreen makes short work of altering shooting settings, which are accessed via the i button.

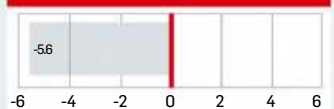
## Nikon D5500 Lab test results

**RESOLUTION AT ISO100** 35 40  
Highest number is best



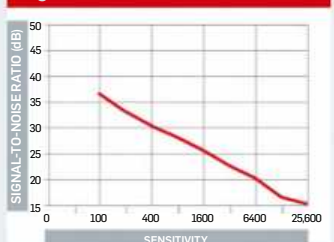
Scores are marginally lower than from the D7200 throughout the sensitivity range, and drop off more than the FX cameras at high ISOs.

**COLOUR ERROR** 4 6  
Closest to zero is best



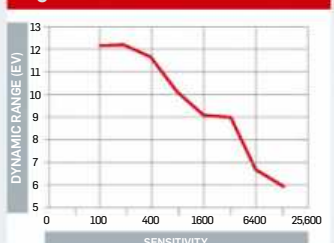
Compared with all other cameras in the group, colour rendition can be fractionally cooler when using auto white balance.

**NOISE VERSUS ISO**  
Highest values are best



As expected, signal-to-noise ratios throughout the sensitivity range lag behind those of FX cameras.

**DYNAMIC RANGE**  
Highest values are best



Scores aren't as good as from the D7200. Images are sometimes brighter, without such good retention of highlight definition.

### OVERALL BENCHMARK

JPEG images often don't look quite as rich in colour and tone as those from the D7200, D750 and D810, being cooler and lighter overall, but the quality of RAW images from the D5500 is nonetheless impressive.

## Nikon D7200 Key facts

### Image sensor and processing

The performance of the 24.2-megapixel image sensor and newer-generation EXPEED 4 image processor represent big improvements on the preceding D7100. The standard sensitivity range is also greater, at ISO100-25600.

### Autofocus

The new-generation Multi-CAM 3500DX II autofocus module is better able to perform in near-darkness (-3EV) while serving up 51 AF points (15 cross-type). The central AF point enables autofocus with lens/teleconverter combinations that have a widest aperture of f/8.

### Continuous shooting

The six-frames-per-second maximum burst rate increases to seven frames per second in 1.3x crop mode (lacking in the older D7100). The memory buffer is also much larger, with space for 18 to 35 RAW files, whereas the D7100 only had room for six to nine RAW files.

### Metering sensor

In our tests, the D7200's metering proved more consistent than that of both the D5500 and D610, despite the fact that it uses the same 2016-pixel 3D Colour Matrix II metering module. The matrix metering mode works particularly well, even in really tricky lighting conditions.

### Construction

More upmarket than the D5500, the D7200's body shell is mostly constructed from magnesium alloy, although the front panel is polycarbonate. The D7200 is weather sealed for greater environmental protection, at least when using similarly weather-sealed lenses.

### Need to know

More sporty than the D5500, the D7200 features a faster maximum burst rate, and a faster maximum shutter speed of 1/8000 sec (matched only by the D810 in this test group). While the D5500 and D750 have built-in Wi-Fi, the D7200 also has NFC (Near Field Communication).



# Nikon D7200

*For our money, it's simply the best DX-format camera ever, with satisfyingly high-end features, handling and performance*

**DX-FORMAT D-SLR** £850, \$1200 (body only) ▶ [www.nikon.com](http://www.nikon.com)

**R**emember the D300 and D300s? Those 'professional'-grade DX-format cameras set such a high standard that the 'consumer-class' D7000 and D7100 struggled to fill their boots. In some respects, the D7200 is only an incremental upgrade, but most of its key features have been revamped.

In terms of handling, the D7200 is remarkably similar to current full-frame favourites like the D610 and D750. There's not much difference in size or weight either, although the new D750's main body section is a little less chunky.

As a DX body, the D7200 is a good choice for action sports and wildlife photography, where the 1.6x crop factor of the sensor stretches the telephoto reach

of lenses. It also has a swift six-frames-per-second maximum burst rate, increasing to seven frames per second in 1.3x crop mode, which further extends the focal length magnification effect. Better still, whereas the previous D7100 had a relatively small memory buffer that could be filled with as few as six RAW files, the D7200 has a more capacious buffer for up to 18 to

35 RAW files, depending on bit-depth and compression settings.

### Performance

Autofocus, metering and auto white balance give accurate results. Colour rendition and contrast are similar to that of the D750, although retention of fine detail is relatively poor at very high ISOs. Apart from that, overall performance is excellent.



Autofocus, metering and white balance are very accurate and highly consistent

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

### OVERALL ★★★★★

**WE SAY...** Edges ahead of the D5500 in terms of performance and quality.



# The D7200 at a glance

## Sub-command dial

Used for various functions as well as setting the aperture of mounted lenses, the sub-command dial is common to all cameras in this group apart from the D5500.

## Pv and Fn buttons

Typical of Nikon's tailored approach to camera control, the actions of the depth of field preview and function buttons are customisable.

## AF mode button

A common feature on most recent Nikon SLRs, the AF mode button works in conjunction with the main and sub-command dials.

## Restore defaults

As with the D610 and D750, the exposure compensation button can be used in conjunction with the ISO button to restore default camera settings if needed.

## Top LCD

Characters on the info LCD are large and easy to read, although the information displayed is relatively limited.

## Mode dial

The shooting mode dial, with its Scene and Effects settings, plus two user-defined positions, is identical to that on the D750.

## Viewfinder

It's a high-quality pentaprism viewfinder with 100 per cent frame coverage, but the view still looks a bit cramped compared with what you get on FX-format bodies.

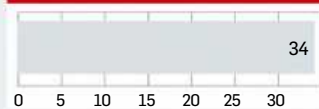
## Left-hand buttons

The buttons down the left-hand side have dual functions for use in shooting and playback modes. Again, they're identical to those found on the D750.

# Nikon D7200 Lab test results

## RESOLUTION AT ISO100

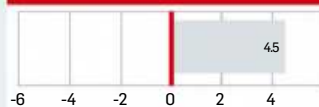
Highest number is best



At sensitivity settings up to and including ISO1600, the D7200 puts in the best scores of any camera in the group apart from the D810.

## COLOUR ERROR

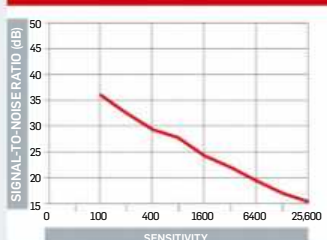
Closest to zero is best



In lab conditions, the D7200 has marginally warmer colour rendition than the D750 but, for day-to-day shooting, they're almost identical.

## NOISE VERSUS ISO

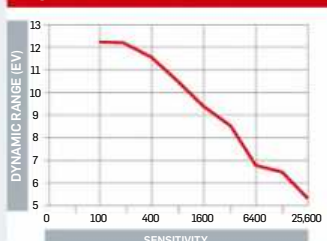
Highest values are best



The D7200 maintains fairly low noise at high ISO settings, but with a noticeable loss of fine detail.

## DYNAMIC RANGE

Highest values are best



Slightly better than the D5500 for dynamic range, the D7200 retains a little more detail in both highlights and shadows.

## OVERALL BENCHMARK

RAW performance is very impressive and JPEGs look great straight out of the camera – in fact, the overall performance is very similar to that of the D750 at low to medium ISO settings.

## Nikon D610 Key facts

### Image sensor and processing

Although its megapixel count (24.3) is identical to the D750's, the D610's image sensor is an older device. Its EXPEED 3 image processor is, again, a generation older. As such, the D610 struggles to hold its own in some areas of performance.

### Autofocus

The 39 AF points of the Multi-CAM 4800 autofocus module are quite tightly packed in the central part of the frame. Nine points are cross-type, and the seven central points are compatible with a widest available aperture of f/8, which is good news when using teleconverters.

### Continuous shooting

It's not exactly a speed demon, with a maximum burst rate of six frames per second, but it's only half a frame per second behind the newer D750. The buffer enables continuous drive for up to 14 to 26 shots in RAW quality mode, depending on bit-depth and compression settings

### Metering sensor

The D610 uses the same metering module as the D5500 and D7200. Consistency from one shot to the next in identical conditions can be lacking, as in the D5500, whereas the D7200 fares better, and more like the D750 and D810 with their newer metering modules.

### Construction

The weather-sealed construction follows the same design criteria as the D7200, with magnesium alloy being employed for the top and rear sections, along with a tough polycarbonate front section. Overall, the D610's build feels rigid, sturdy and of good quality.

### Need to know

The D610 is one of the few remaining Nikon SLRs to feature an optical low-pass filter in front of its sensor. At either end of the scale, the entry-level D3300 and pro-grade D810 both omit OLPFs, to maximise retention of detail. The D750 is the only other camera on test to include an OLPF.



# Nikon D610

*More of a tweak than a major revamp, the D610 cleans up the spotty-sensored act of its predecessor, the D600*

**FX-FORMAT D-SLR** £1185, \$1500 (body only) ▶ [www.nikon.com](http://www.nikon.com)

**P**redating the D610 by just over a year, the D600 was Nikon's first consumer-level full-frame D-SLR. It was well received, apart from reports from some owners of oil contaminating the image sensor. The shutter mechanism was the prime suspect, and the D610 features a completely new shutter unit. Other upgrades include a faster maximum burst rate of six frames per second, a 'Quiet continuous' drive mode (three frames per second maximum), and a claimed increase in auto white balance accuracy.

Under the skin, the D610 is a generation older than all the other cameras on test, at least in terms of its image sensor. On the surface, it lacks a separate 'i' button, requiring a double-press

of the Info button to access the on-screen shooting menu. It also lacks an 'Effects' position on the shooting mode dial.

### Performance

The 39-point autofocus system is pretty accurate, but the spread of AF points covers only a fairly central part of the image frame. A bigger issue is that, while Nikon claims an increase in

white balance accuracy over the D600, we found that auto white balance gave less consistency in colour rendition on a shot-to-shot basis under identical lighting conditions than any other camera in the group. The same is true of exposure metering, and the D610 loses out to the D750 in its ability to deliver low-noise images at high ISO settings.



In our tests, auto white balance and metering lacked consistency

### Photo VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

### OVERALL ★★★★★

**WE SAY...** Keenly priced for an FX camera, but the D750 is superior.



## The D610 at a glance

### AF assist beam

As with all the other cameras on test, an AF assist beam helps with autofocus performance in low-light conditions.

### Pop-up flash

As with all cameras in the group apart from the D5500, the pop-up flash can be configured as a wireless commander for compatible remote flashguns.

### Drive mode dial

The placement of this dial is the same as in the D7200, D7500 and D810. All three FX bodies feature a 'Quiet continuous' drive mode.

### Shooting mode dial

There aren't any 'effects' available on the shooting mode dial, but a few, including Colour sketch, Colour outline, Selective colour and Miniature effect, are available during playback in the Retouch menu.

### Viewfinder

Big, bright and clear, the pentaprism viewfinder is easy on the eye and has the same magnification factor and 100 per cent frame coverage as in the D750 and D810.

### Left-hand buttons

They're slightly out of step with the D7200 and D750, lacking an i button but giving direct access to picture controls like Standard, Portrait and Landscape.



### BKT button

The handy exposure bracketing button is common to the D7200, D610, D750 and D810.



### Top LCD

The top info LCD features a greater range of information than the D7200, but the size of the characters and icons is somewhat smaller.

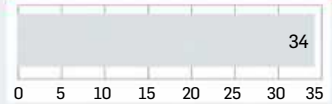


### AE-L/AF-L

Unlike the D810, there's no dedicated AF-On button, but this function is available by customising the action of the auto-exposure lock/autofocus lock button.

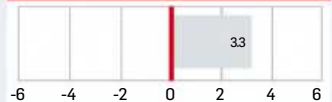
## Nikon D610 Lab test results

**RESOLUTION AT ISO100** 35 40  
Highest number is best



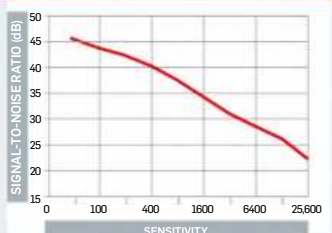
At low ISOs, resolution is the worst of any camera in the group, although it edges ahead of the DX-format D5500 at high settings.

**COLOUR ERROR** 4 6  
Closest to zero is best



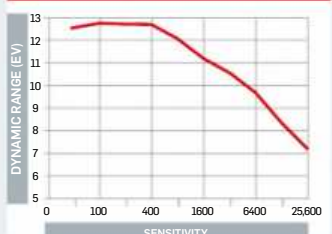
Accurate when using manual white balance settings, but auto white balance gives rise to more errors than with other cameras on test.

**NOISE VERSUS ISO**  
Highest values are best



Gives the best performance of any camera in the group, although it's beaten by the D750 at high ISOs.

**DYNAMIC RANGE**  
Highest values are best



The D610 scores well for dynamic range, retaining plenty of fine detail in highlights and shadows, as well as midtones.

### OVERALL BENCHMARK

Inconsistencies in metering and auto white balance detract from what can be excellent image quality that's high in detail and low in image noise when everything goes according to plan.

## Nikon D750 Key facts

### Image sensor and processing

The high-ISO performance of Nikon cameras has been impressing even the most demanding photographers for years. The D750's new image sensor, coupled with an EXPEED 4 processor, delivers superlative results even at high ISOs.

### Autofocus

As with the autofocus module in the D7200, the new Mk II edition of the Multi-CAM 3500 gives 51-point autofocus with 15 cross-type points, as well as greater sensitivity right down to -3EV. In the D750, 11 of the central points can be used with a widest available aperture of f/8.

### Continuous shooting

The D750 has the fastest maximum burst rate of any camera in the group (without using a cropped image mode), at 6.5 frames per second. The buffer depth is respectable as well, enabling up to 15 to 33 shots in RAW quality mode, depending on bit-depth and compression settings.

### Metering sensor

Equaling the capabilities of the D810, the D750 uses the latest-generation 3D Colour Matrix III module that Nikon has available, based on 91,000 pixels. That's a whole lot more than the 2016 pixels of the D5500, D7200 and D610. Matrix metering is particularly accurate and reliable.

### Construction

It's outclassed by the full magnesium alloy build of the D810 but, with its mix of magnesium alloy top and rear, and carbon-fibre composite front section, the D750 feels lightweight yet tough. It's weather sealed and, uniquely for a Nikon FX camera, features a tilting LCD screen.

### Need to know

The D750 is the only full-frame Nikon SLR to feature built-in Wi-Fi. A free companion app is available to download for Android and iOS devices, enabling remote shooting as well as uploading of photos via tablets or smartphones. However, the D750 lacks the NFC facilities of the newer D7200.



# Nikon D750



*New and improved, slimmer and sleeker, more powerful and sophisticated – this superb camera is hard to resist*

**FX-FORMAT D-SLR** £1500, \$2000 (body only) ▶ [www.nikon.com](http://www.nikon.com)

**S**haped like a grown-up version of the D5500, the D750 is very slim, but with a well-rounded finger grip on the right and without the left side being truncated. It's only 10 grams lighter than the D610, but features a D5500-esque monocoque design. Even so, there's a blend of magnesium alloy and carbon-fibre composite materials in the shell. Its control layout is almost identical to the D7200's but, thanks to the svelte shape, the top-panel info LCD is noticeably thinner.

With its redesigned sensor and later-generation EXPEED 4 image processor, the D750 is a significant advance over the D610. Bonuses include a Multi-CAM 3500 II autofocus system, which is a newer version of the one in the D810. There's also a

top-spec 3D Colour Matrix III metering system, as featured in the D810. Handling benefits from a tilting LCD screen, which lacks full vari-angle articulation, but still enables easy Live View and video shooting from high and low angles.

### Performance

Throughout all of our tests, the D750 performed flawlessly.



Image quality is both consistent and good throughout sequences of shots

Its auto white balance and metering systems proved almost impossible to fool, and gave much greater consistency than in the D610. Autofocus performance is similarly impressive, even when acquiring tricky targets under very low lighting. And speaking of low lighting, image quality remains spectacular even when shooting at very high ISO settings.

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★★

### OVERALL ★★★★★

**WE SAY...** The best choice of all current Nikon enthusiast bodies.



## The D750 at a glance

### Sub-command dial

Not just for adjusting aperture, the sub-command dial works in conjunction with the AF mode button, exposure bracketing button and other functions.

### Control buttons

The usual front control buttons include depth of field preview, an assignable function button, autofocus modes, and other functions.

### Hotshoe

As with all cameras in this group, the hotshoe sits towards the rear of the combined viewfinder housing and pop-up flash module.

### Shooting and drive modes

The main shooting mode dial is identical to that of the D7200, whereas the underlying drive mode dial has an additional 'Quiet continuous' setting.

### Viewfinder

The usual grid pattern overlay is available in the D750's high-quality pentaprism viewfinder, which gives full 100 per cent frame coverage.

### Tilting screen

The screen is a tilting affair, which makes high- and low-level shooting easier in landscape orientation, and even enables shooting around corners in portrait orientation.



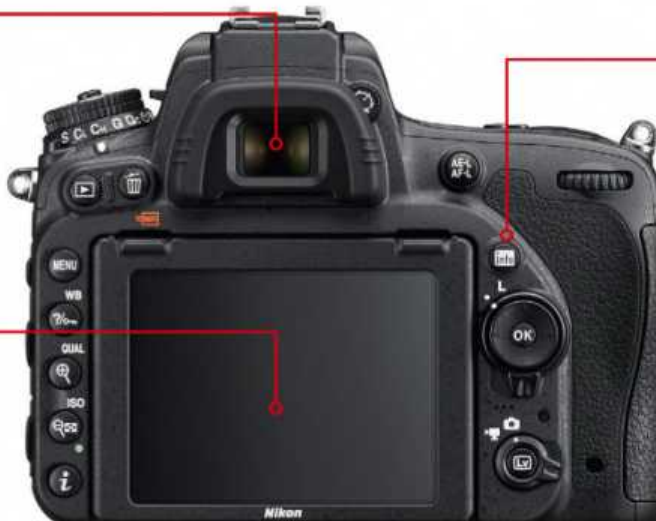
### Front IR receiver

The position of the front infrared receiver for remote control is typical, and is the same as on the D7200 and D610 bodies.



### Top LCD

The LCD on the top panel is slimmer than those of the D7200, D610 and D810, showing a fairly basic range of information.

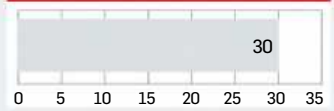


### Info button

The Info button gives a ready check of camera settings on the main screen. It's been repositioned compared with the D7200, and placed above the multi-selector pad.

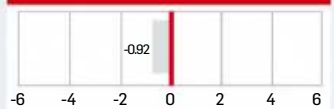
## Nikon D750 Lab test results

### RESOLUTION AT ISO100



Despite the inclusion of an optical low-pass filter, the D750 delivers impressive resolution at low ISOs and is excellent at high settings.

### COLOUR ERROR



Colour rendition is very similar to that of the D7200, and benefits from enormously consistent metering and auto white balance.

### NOISE VERSUS ISO

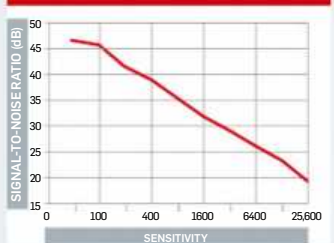
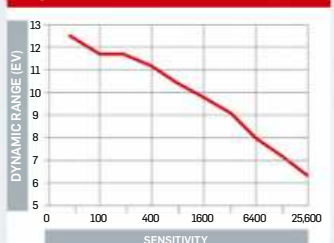


Image noise is less visible in low-light shots taken at high ISOs than with any other SLR on test.

### DYNAMIC RANGE



At most ISOs, scores for dynamic range are a close match to those of the D810, but the D750 edges ahead at ISO6400 and above.

### OVERALL BENCHMARK

Lab scores don't do full justice to the simply spectacular image quality that the D750 delivers – and it delivers them in any lighting condition you can think of, from bright daylight to near-darkness.

## Nikon D810 Key facts

### Image sensor and processing

Although the D810 has the same megapixel count as the preceding D800 and D800E, it boasts a new image sensor, and the OLPF has been completely removed. The D810 also has a newer EXPEED 4 image processor.

### Autofocus

Nikon's Multi-CAM 3500 autofocus module is featured, with 51 AF points, of which 15 are cross-type and 11 work at f/8. However, it's the original edition of the module, and in our tests, the D810's autofocus accuracy and consistency weren't quite as good as in the D750.

### Continuous shooting

The burst rate of five frames per second is pretty amazing for such a high-resolution camera, and the buffer enables you to shoot 23 to 58 RAW files, depending on bit-depth and compression settings. You can boost the drive rate to seven frames per second by switching to DX crop mode.

### Metering sensor

Like the D750, the D810 features the very latest 3D Colour Matrix III metering module with 91,000 pixels. It's extremely reliable and consistent and works equally flawlessly in both cameras. Again, matrix metering mode is uncannily clever.

### Construction

Tough and durable, the D810 is the only camera in this group to feature a body shell that's made entirely from magnesium alloy. It also features extensive weather seals, as do the D7200, D610 and D750, but the D810's overall build quality feels a cut above the rest,

### Need to know

The D810 can munch through memory cards at an alarming rate, with individual RAW and TIFF files being as large as 75MB or 110MB respectively. However, when set to 14-bit compressed RAW shooting in our tests, we found file sizes averaged out to around 44MB.



# Nikon D810

*The ultra-high-resolution king of the Nikon line-up, this camera builds on the success of the well-respected D800 and D800E*

**FX-FORMAT D-SLR** £2350, \$3000 (body only) ▶ [www.nikon.com](http://www.nikon.com)

**C**onsidering that the fully professional-grade D4s has a megapixel count of just 16.2, and that all the other cameras on test have 24.2-megapixel or 24.3-megapixel sensors, the 36.3-megapixel D810 really rules the high-res roost. It's therefore a tempting choice for landscape, still life and macro photographers who want to retain the utmost fine detail and texture in images.

The D810 is the only camera in this group that's officially classified by Nikon as a 'professional' model. As such, it has a tough magnesium alloy build and, while it lacks the built-in vertical grip of cameras like the D4s, it's bigger and heavier than any of the other bodies on test, tipping the scales

at nearly a kilogram. The control layout is also more in line with Nikon's other pro-level bodies.

### Performance

Despite its high megapixel count, the D810 is no slouch, turning in a maximum burst rate of five frames per second, rising to seven frames per second in DX crop mode. Its main strength, however, is



There's no beating the D810 for retention of fine detail and texture at low ISOs

that it can retain incredible levels of fine detail. There's a special smooth-action shutter/mirror unit that minimises blurring from mirror bounce, plus the option of using an electronic front-curtain shutter. However, the price you pay for the extra resolution is that high-ISO images under low-light conditions are noisier than those from the D610 and D750.

### NPhoto VERDICT

FEATURES	★★★★★
BUILD QUALITY	★★★★★
IMAGE QUALITY	★★★★★
VALUE FOR MONEY	★★★★☆

### OVERALL ★★★★★

**WE SAY...** Delivers incredible detail, but not the best low-light performer.



## The D810 at a glance

### Bracket and flash

The positions of the exposure bracketing and flash buttons are reversed compared with other cameras in the group.

### Preview and Fn

The depth of field preview and function buttons are closer together than in the D7200, D750 and D810.

### Mode button

The mode button works in conjunction with the main command dial to access PASM shooting modes. No scene modes are featured.

### Button array

As on most pro-level Nikons, a conventional shooting mode dial is absent, and is replaced by a button array. This gives access to white balance, quality, metering modes and ISO.

### Drive mode dial

As with the D610 and D750, the drive mode dial includes a 'Quiet continuous' setting.

### Viewfinder shutter

Handy for long-exposure shooting, there's a built-in viewfinder shutter with operating lever. This is absent on all other cameras in the group.



### Sync and remote

A rubber flap next to the bracket and flash buttons conceals the sync terminal and 10-pin remote socket.



### Top LCD

Unlike in the D7200 and D750, the top-panel LCD aims to give as much shooting information as possible, with smaller character and icon sizes.



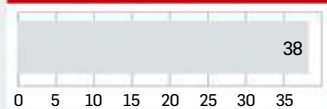
### AF-On

Another control button that's only featured on the D810 in this group of cameras is the dedicated AF-On button for activating autofocus.

## Nikon D810 Lab test results

### RESOLUTION AT ISO100

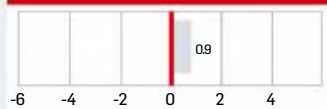
Highest number is best



As you'd expect, the D810 romps away to win the resolution battle hands down, right through its sensitivity range.

### COLOUR ERROR

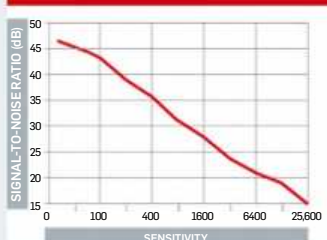
Closest to zero is best



Colour rendition is extremely similar to that of the D7200 and D750, and is similarly consistent when using auto white balance.

### NOISE VERSUS ISO

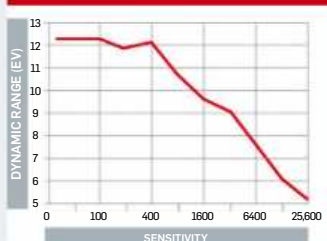
Highest values are best



High-ISO image noise is similar to that of the D5500 and D7200, but with greater retention of detail.

### DYNAMIC RANGE

Highest values are best



It's a close match to the D610 and D750 throughout most of the sensitivity range, but drops off a little at very high ISOs.

### OVERALL BENCHMARK

As borne out in real world testing, lab scores reveal that the D810 is unbeatable for resolution, but that high-ISO image noise is more noticeable than from the other full-frame cameras.

# ESSENTIAL KIT

## COMPARISON TABLE HOW THE CAMERA BODIES COMPARE



CAMERA	D5500	D7200	D610	D750	D810
STREET PRICE (BODY ONLY)	£560/\$750	£850/\$1200	£1185/\$1500	£1500/\$2000	£2350/\$3000
DATE ANNOUNCED	Jan 2015	Mar 2015	Oct 2013	Sep 2014	June 2014
DX/FX	DX	DX	FX	FX	FX
IMAGE SENSOR / PROCESSOR	24.2Mp CMOS / EXPEED 4	24.2Mp CMOS / EXPEED 4	24.3Mp CMOS / EXPEED 3	24.3Mp CMOS / EXPEED 4	36.3Mp CMOS / EXPEED 4
RAW COLOUR DEPTH	12/14-bit	12/14-bit	12/14-bit	12/14-bit	12/14-bit
VIEWFINDER	Pentamirror, 0.82x, 95%	Pentaprism, 0.94x, 100%	Pentaprism, 0.7x, 100%	Pentaprism, 0.7x, 100%	Pentaprism, 0.7x, 100%
ISO RANGE (EXPANDED)	ISO100-25600	ISO100-25600 (ISO102400 mono)	ISO100-6400 (ISO50-25600)	ISO100-12800 (ISO50-51200)	ISO64-12800 (ISO32-51200)
AUTOFOCUS MODULE	Multi-CAM 4800	Multi-CAM 3500 II	Multi-CAM 4800	Multi-CAM 3500 II	Multi-CAM 3500
AUTOFOCUS POINTS	39-point (9 cross-type)	51-point (15 cross-type)	39-point (9 cross-type)	51-point (15 cross-type)	51-point (15 cross-type)
NARROWEST AF APERTURE	f/5.6	f/8 (1 central AF point)	f/8 (7 central AF points)	f/8 (11 central AF points)	f/8 (11 central AF points)
METERING SYSTEM / MODULE	3D Colour Matrix II / 2016 pixels	3D Colour Matrix II / 2016 pixels	3D Colour Matrix II / 2016 pixels	3D Colour Matrix III / 91000 pixels	3D Colour Matrix III / 91000 pixels
SHUTTER SPEEDS	1/4000 sec to 30 secs, Bulb	1/8000 sec to 30 secs, Bulb	1/4000 sec to 30 secs, Bulb	1/4000 to 30 secs, Bulb	1/8000 sec to 30 secs, Bulb
FLASH SYNC SPEED	1/200 sec	1/250 sec	1/200 sec	1/200 sec	1/250 sec
MAX BURST RATE (FX)	5fps	6fps (7fps 1.3x crop)	6fps	6.5fps	5fps (7fps DX crop)
BUFFER CAPACITY (RAW) / MEMORY	10-14 shots / 1x SD/HC/XC	18-35 shots / 2x SD/HC/XC	14-26 shots / 2x SD/HC/XC	15-33 shots / 2x SD/HC/XC	23-58 shots / 1x CF, 1x SD/HC/XC
VIDEO – MAX RESOLUTION	1080p (24/25/30/50/60fps)	1080p (24/25/30/50/60fps)	1080p (24/25/30fps)	1080p (24/25/30/50/60fps)	1080p (24/25/30/50/60fps)
LCD SCREEN	3.2-inch, 1,037k, touch, vari-angle	3.2-inch, 1,229k	3.2-inch, 921k	3.2-inch, 1,229k, tilt	3.2-inch, 1,229k
WI-FI	Built-in	Built-in, + NFC	Optional, WU-1b	Built-in	Optional, UT-1 & WT-5
BODY MATERIALS	Carbon-fibre composite	Mag alloy & polycarbonate	Mag alloy & polycarbonate	Mag alloy & carbon-fibre	Magnesium alloy
BODY (WxHxD) / WEIGHT	124x97x70mm / 470g	136x107x76mm / 765g	141x113x82mm / 850g	141x113x78mm / 840g	146x123x82mm / 980g
BATTERY LIFE (CIPA)	EN-EL14a, 820 shots	EN-EL15, 1110 shots	EN-EL15, 900 shots	EN-EL15, 1230 shots	EN-EL15, 1200 shots
FEATURES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BUILD QUALITY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
IMAGE QUALITY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
VALUE FOR MONEY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

## THE WINNER IS...

### Nikon D750

*In the enthusiast category, Nikon's latest SLRs are also their greatest, in both the FX and DX camps*

The D750 is the outright winner of the group. It's a phenomenal camera that combines supremely accurate, reliable and consistent autofocus, metering and auto white balance performance, equating to sumptuous image quality time after time. The body is compact and lightweight for a full-frame camera, with excellent handling and intuitive yet highly advanced controls. The tilting rear screen is an extra bonus for



Live View and movie shooting, enabling you to compose shots from tricky angles.

Naturally, the D750 is outclassed by the D810 when it comes to outright resolution, but it fights back with squeaky-clean image quality under low-lighting conditions, even at very high ISO settings. Ultimately, the more expensive D810 is only really worth considering if you're determined to capture the absolute maximum of fine detail and

texture in your photos, at the expense of clean high-ISO images.

At the lower end of the full-frame price scale, the older D610 is a good buy at the price, but it simply can't match the D750 and D810 for image quality or reliably consistent metering and auto white balance. The D610 also has a relatively low-rent 39-point autofocus system.

Moving to DX-format bodies, the D5500 and D7200 both have a lot to offer. The D5500 is incredibly compact and lightweight. It lacks advanced direct-access controls for most shooting settings, but the articulating, touch-sensitive screen is some compensation. Even so, the D7200 wins out, with slightly richer image quality, more consistent metering and top-performance autofocus. For our money, it's Nikon's best DX camera ever, and a real improvement over the D7000 and D7100. ■



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# CAMERA BAG ESSENTIALS



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## ANIMAL MAGIC

*Take a walk on the wild side with sharp-shooting super-telephoto lenses. We go on the hunt for the best buys*

## THE CONTENDERS

- 1 Sigma 150-600mm f/5-6.3 DG OS HSM | S £1500, \$2000
- 2 Nikon AF-S 80-400mm f/4.5-5.6G ED VR £1900, \$2700
- 3 Sigma APO 300mm f/2.8 EX DG HSM £2280, \$3400
- 4 Sigma 120-300mm f/2.8 DG OS HSM | S £2700, \$3600
- 5 Sigma APO 500mm f/4.5 EX DG HSM £3760, \$5000
- 6 Nikon AF-S 300mm f/2.8G ED VR II £4000, \$5900
- 7 Nikon AF-S 200-400mm f/4G ED VR II £4900, \$7000
- 8 Nikon AF-S 400mm f/2.8E FL ED VR £10,400, \$12,000







## EQUIPMENT KNOW-HOW

### FEATURES TO LOOK FOR...

*Be sure to check out competing focal lengths, apertures and other lens specifications*

#### Focal length

Longer is usually better for wildlife, but even a focal length of 300mm can be very useful, especially when it's mounted on a DX-format body.

#### Physical presence

Size and weight can be important considerations if you're trekking into the wilds. The lenses on test range from 1.57 kilograms to as much as 3.8 kilograms.

#### Go wide

Wider maximum apertures enable faster shutter speeds and tighter depths of field, but will typically result in bigger, heavier, and pricier lenses.

#### Get some stability

Optical stabilisation systems help to minimise camera shake (but not subject blur) without the need for super-fast shutter speeds – useful for handheld or monopod-mounted shooting.

#### Faster focusing

Ring-type ultrasonic autofocus systems are featured in all of these lenses. They tend to be rapid and (importantly) whisper-quiet in operation.

#### Whatever the weather

The two Sigma prime lenses and the Nikon 80-400mm in this test group don't feature weather-seals, although the latter does at least boast a rubber sealing ring on its mounting plate.



**W**ildlife is wild, by its very nature. You can hardly ask an animal to pose nicely on a nearby rock while you put on your best portrait lens. You'll usually need to keep your distance from your subject – and, in fact, the bigger and pointier the teeth, the more telephoto reach you'll probably want. The lenses in this test group really cover the distance, starting with a bare minimum focal length of 300mm (which is still a fair amount) and going all the way up to 600mm.

As well as sheer telephoto reach, speed is often of the essence when you're photographing wildlife, in more ways than one. The interaction between predator and prey is literally a matter of life and death, and to capture the full thrill of the chase you'll need a lens with fast autofocus that can keep pace. You won't always be shooting under bright sunlight either, so 'fast' lenses with relatively wide apertures can make it possible for you to use fast shutter speeds without resorting to using very

high ISO settings and risking too much noise.

The wildlife lens equation is: longer focal length plus wider aperture equals greater bulk and a higher price. Indeed, the Nikon 400mm f/2.8 prime lens on test weighs in at nearly four kilograms and costs £10,400/\$12,000. At the other end of the scale, the Nikon 80-400mm has a relatively narrow maximum aperture of f/5.6 at the long end of its zoom range, and is much lighter and more affordable at 1.57 kilograms and £1900/\$2700.

As always, there are pros and cons to prime and zoom lenses. Prime lenses have a reputation for delivering optimum image quality without any compromise in sharpness, and with fewer distortions and unwanted aberrations being introduced by the complexity of zooming. On the other hand, if you're confined to one physical location for shooting wildlife – if you're in a hide, say – a zoom lens will give you much greater versatility in composing

shots. You can also side-step the burden of carrying multiple monster prime lenses, as the zoom range of a single lens can cover two or three popular focal lengths. On top of that, some of the latest and greatest zoom lenses really can rival the best prime lenses for image quality.

Two primes that we would normally include in this round-up are the Nikon 500mm and 600mm lenses, both of which are natural contenders for wildlife photographers. However, at the time of going to press, Nikon had discontinued the existing lenses and had just announced brand-new replacements.

So, without further ado, let's take a closer look at the most desirable wildlife lenses on the market. All but one lens in this test group costs £5000/\$7000 or less, and there are even a couple of attractive 'budget' options for £2000/\$2700 or less.

## JARGON BUSTER

### Weather seals

■ Weather-sealed lenses have dust/moisture resistant gaskets around switches, joints and moving parts, as well as a rubber ring on the mounting plate.

### Focal length

■ Lenses with greater focal lengths will have a smaller angle of view and therefore give a larger magnifying effect, reproducing a smaller area of the scene.



## STEP BY STEP | Long, longer, longest

Here's how different focal lengths work out in terms of relative telephoto reach



### 01 300mm FX

Shot with a focal length of 300mm on an FX (full-frame) body, this image of a fallow deer was captured at a range of about 30 metres. All of the lenses in this test group give at least this much telephoto reach.



### 02 600mm FX

The Sigma 150-600mm gives the greatest telephoto reach of any lens on test. Shooting at 600mm instead of 300mm, the angle of view is approximately halved, so a quarter of the subject area will now fill the whole frame.



### 03 600mm DX

The 1.5x crop factor of DX-format cameras gives a 600mm lens an 'effective' focal length of 900mm. Compared to shooting with an FX body, this is similar to filling the frame with an area that's two-thirds the width and two-thirds the height.

## 10 things we learned in this test

*It's possible to go wild in the country and keep a natural perspective without getting weighed down*

### 1 Heavy load

We found that some lenses in the group are easily manageable for handheld shooting, whereas others can literally be a pain.

### 2 Stiff collar

A tripod offers the best support for long spells of shooting. All lenses in this group come with tripod collars and feet for better balance.

### 3 Do the twist

Tripod collars are great for switching between landscape and portrait (upright) orientation shooting, while maintaining good balance on a tripod or monopod.

### 4 Get a gimbal

For shooting birds in flight, a gimbal head keeps the camera and lens balanced while smoothly tracking vertically as well as horizontally.

### 5 Go steady

Vibration reduction or optical stabilisation is a real bonus in telephoto shooting, even when using a monopod.

### 6 On the move

VR or OS can't overcome motion blur, but a manually switched or auto-sensing panning mode can still be a big benefit.

### 7 Take priority

Shutter-priority mode is ideal when you need a fast shutter speed to freeze action. Use a high ISO to avoid under-exposure.

### 8 Prime numbers

For lenses with comparable telephoto reach and the widest apertures, primes tend to be smaller and lighter than zooms, with fewer internal elements.

### 9 Fixed gaze

Variable-aperture telephoto zooms tend to extend greatly in physical length at longer zoom settings, whereas constant-aperture telephoto zooms generally remain fixed.

### 10 Still life

For stationary wildlife, try using a tripod and the auto exposure delay of most Nikon D-SLRs, to avoid mirror bounce blurring your telephoto shots.

### HOW WE DO OUR TESTS...

## REAL WORLD MEETS LAB

*We combine rigorous lab tests with real-world shooting for the most accurate results possible*

■ To test real-world performance, we use lenses in wide-ranging lighting conditions on a variety of different camera bodies. We check for good build quality and handling, smooth and precise operation of zoom and focus rings, and test the speed and accuracy of autofocus, and the effectiveness of optical stabilisation (where fitted).

We also run a full range of lab tests under controlled conditions, using the Imatest

Master suite. Photos of test charts are taken across the range of apertures and focal lengths and analysed for sharpness, distortion and chromatic aberrations (colour fringing). A summary of these results is shown towards the end of the group test, but we also take data from a wider range of apertures and zoom settings into consideration. We combine the lab tests and real-world shooting results to give overall ratings.





## Sigma 150-600mm f/5-6.3 DG OS HSM | S £1500, \$2000

*This is the least expensive lens in the whole group yet gives the longest telephoto reach*

Like the Nikon 80-400mm also on test, this lens from Sigma's 'S' (Sport) line-up has a variable widest aperture that shrinks at longer zoom settings. The widest aperture of f/6.3 at 600mm is still two-thirds of a stop faster than adding a 1.4x teleconverter to the Nikon to get similar telephoto reach.

Smart features include a 'MO' (Manual Override) autofocus mode, in which autofocus is disabled if you turn the focus ring. The dual-mode optical stabiliser includes static and panning options, and there's a focus limiter switch, plus a switch for custom settings which are programmable via Sigma's optional USB dock.

At 2.86 kilograms it's heavier than the Nikon 80-400mm, and it's prone to zoom creep. However, the zoom lock switch can be engaged at any focal length that's marked on the barrel. It's also more thoroughly weather sealed than the Nikon.

### Performance

Autofocus is quick, but not as fast as in the Nikon lenses. The revamped optical stabiliser is more effective than in Sigma's older 150-500mm OS, giving a four-stop benefit in our tests. Fluorite-grade glass boosts image quality. While sharpness drops off at the longest zoom settings, it still beats the Nikon 80-400mm at 400mm.



## Nikon AF-S 80-400mm f/4.5-5.6G ED VR £1900, \$2700

*New and improved, this lens represents a major revamp of the innovative original version*

The D-mount version of Nikon's 80-400mm was the first Nikon lens to feature Vibration Reduction (two stops). In other respects, it was still quite an old-tech affair, with no built-in autofocus actuator.

The replacement G-mount edition is bang up to date, and adds ring-type ultrasonic autofocus (making autofocus available on any Nikon D-SLR). VR is upgraded to four-stop performance and includes an 'Active' mode, ideal for shooting from vibrating platforms like an idling vehicle. The focus limiter switch only cuts out the short range of autofocus travel, and the zoom lock switch can only be engaged at the shortest focal

length. However, like the pricier Nikon lenses, it features A/M, M/A and M focus modes, the dual modes giving priority to either auto or manual focusing. Nano crystal coatings reduce ghosting and there's a rubber ring on the mounting plate, although the lens isn't weather-sealed. It's about half the weight of most lenses in the group.

### Performance

Autofocus is a little faster than in the Sigma 150-600mm lens, but sharpness isn't quite as good at 400mm. Colour fringing is well controlled, benefitting from the inclusion of four ED (Extra-low Dispersion) elements and one Super ED element.

### Tech focus

24 elements in 16 groups; nine diaphragm blades; 2.6m closest focus distance; 105mm filter thread (front); ring-type ultrasonic AF; four-stop optical stabiliser; dimensions 121x290mm; weight 2.86kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★  
WE SAY... Champion of the group for telephoto reach, it's great value.

### Tech focus

20 elements in 12 groups; nine diaphragm blades; 1.5m closest focus distance; 77mm filter thread (front); ring-type ultrasonic AF; four-stop optical stabiliser; dimensions 96x203mm; weight 1.57kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★  
WE SAY... An improvement on the original, but beaten by the Sigma.





## Sigma APO 300mm f/2.8 EX DG HSM £2280, \$3400

*This lens is reasonably compact considering the combination of focal length and fast f/2.8 aperture*

Quite a squat lens at 119x215mm, this Sigma prime lens is shorter than the competing Nikon 300mm f/2.8 and about two-thirds the length of Sigma's 500mm lens. It's also the second-lightest lens in the group at 2.4 kilograms, but it's still substantially heavier than the Nikon 80-400mm.

As you'd expect of a 300mm lens with a fast f/2.8 aperture, the front element is very wide and there's no front filter attachment thread, although you can add 46mm 'drop-in' filters at the rear. The filter holder is well implemented, with a ring that enables rotation of filters like ND grads and circular polarisers.

In most respects, the Sigma looks quite low-tech. It lacks the forward-mounted autofocus buttons of the upmarket Nikon lenses, there's no focus limiter switch, no optical stabiliser and no AF/M switch. There are no weather seals and, unlike in the newer Sigma zoom lenses, no provision for custom settings.

### Performance

The f/2.8 aperture is nice to have and pincushion distortion is minimal, but sharpness lags behind Sigma's 120-300mm and 150-600mm zoom lenses at their 300mm zoom settings. Colour fringing towards image corners is also worse than with any other lens in the group.

### Tech focus

11 elements in nine groups; nine diaphragm blades, 2.5m closest focus distance; 46mm filter thread (drop-in); ring-type ultrasonic AF; no built-in optical stabiliser, dimensions 119x215mm; weight 2.4kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★  
WE SAY... Comes up short on both features and image quality.



## Sigma 120-300mm f/2.8 DG OS HSM | S £2700, \$3600

*Unique for a zoom lens, this one stretches to 300mm with a wide, constant f/2.8 aperture*

Life is full of compromises, especially when it comes to telephoto zooms. If you want an f/2.8 aperture throughout the zoom range, you normally have to limit your reach to 200mm. This Sigma gives you an extra 100mm to play with at the long end, although there's still a compromise when it comes to size and weight. It's big and heavy, although at least its physical length remains fixed throughout the zoom range.

The lens predates Sigma's 150-600mm, but is nevertheless from the new stable of S-class optics. Similarities include weather seals, the availability of two custom settings, a dual-mode optical stabiliser and a

three-position focus limiter switch that can limit autofocus to short or long range as well as enabling full travel. It lacks the newer lens's MO autofocus mode, but both have the usual facility of full-time manual override after autofocus has been acquired.

### Performance

Centre sharpness is spectacular throughout the zoom range, even at the widest aperture, while stopping down to f/4 makes corner sharpness similarly impressive. Consistency of the optical stabiliser isn't quite as good as that of the 150-600mm lens, and autofocus is similarly quick rather than ultra-fast.

### Tech focus

23 elements in 18 groups; nine diaphragm blades; 1.5-2.5m closest focus distance; 105mm filter thread (front); ring-type ultrasonic AF; four-stop optical stabiliser; dimensions 121x291mm; weight 3.39kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★  
WE SAY... Chunkier than Sigma's 300mm prime, but outperforms it.



## Sigma APO 500mm f/4.5 EX DG HSM £3760, \$5000

*This lengthy lens looks and feels like a stretch limo version of Sigma's 300mm prime*

Typical of Sigma's 'EX' lenses, which predate the company's S (Sports) and A (Art) lenses, this has the same textured matte-black finish as the Sigma 300mm lens. It's about the same diameter, but much longer as the 300mm, and it's also rather heavier. Even so, it's only about the same size as the Nikon 200-400mm zoom and 400mm prime lenses, and lighter in weight than either of them. This Sigma has the longest focal length of any prime in the group, and is only beaten for telephoto reach by the Sigma 150-600mm lens.

As with the Sigma 300mm lens, there are few frills: there's no optical stabiliser, no AF/M

focus mode switch, no weather seals and no front-mounted AF buttons. One addition, however, is a focus limiter switch with short, long and full travel options. In keeping with the extra size and weight of the lens compared with the Sigma 300mm, its tripod foot is larger, and a carrying strap is supplied.

### Performance

In our tests, this Sigma had the slowest autofocus performance of any lens in the group, and also delivered the least mid-aperture sharpness, apart from the Nikon 80-400mm at its longest zoom setting. On the plus side, sharpness proved better at f/4.5-5.6 than at f/8.



## Nikon AF-S 300mm f/2.8G ED VR II £4000, \$5900

*Nikon's option is much more of a high-flyer than Sigma's 300mm f/2.8 – but nearly twice the price*

Even a cursory glance reveals that this Nikon lens is bristling with high-end features, making it much more advanced than the competing Sigma 300mm prime. The pro-grade design and weather-sealed construction includes four forward-mounted autofocus buttons with switchable options to use them for AF-on, AF-lock and focus memory recall. The last of these works in conjunction with an autofocus preset button, along with an optional confirmation beep.

There are A/M, M/A and M focusing modes, plus normal and active VR modes (switched on or off via a ring on the barrel). The claimed level of

stabilisation has been reduced to three-stop, in compliance with new CIPA testing. However, it proved as effective as in the Nikon 80-400mm lens. A focus limiter switch enables you lock out the autofocus range closer than six metres. Due to the large diameter of the front element, there's a 52mm drop-in filter arrangement towards the rear, and strap lugs for carrying the lens with a camera attached.

### Performance

Image quality is excellent in all respects, and practically as sharp as from the Nikon 400mm lens. Autofocus is amazingly fast, despite the long travel that enables precise manual focusing.

### Tech focus

11 elements in eight groups; nine diaphragm blades; 4m closest focus distance; 46mm filter thread (drop-in); ring-type ultrasonic AF; no built-in optical stabiliser; dimensions 123x350mm; weight 3.15kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★  
WE SAY... Loses out to most zoom lenses on test for image quality.

### Tech focus

11 elements in eight groups; nine diaphragm blades, 2.2-2.3m closest focus distance; 52mm filter thread (drop-in); ring-type ultrasonic AF; three-stop optical stabiliser (CIPA); dimensions 124x268mm; weight 2.9kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★  
WE SAY... Reach isn't great; image quality and handling are fabulous.





## Nikon AF-S 200-400mm f/4G ED VR II £4900, \$7000

*This fully tricked-up lens is feature-packed and aims to deliver top-flight performance*

Just like the Nikon 300mm f/2.8, this zoom lens is built to a professional standard, based on a weather-sealed magnesium alloy body. It's an f-stop slower, but has the flexibility of zoom along with a greater 400mm maximum focal length. Other similarities include A/M, M/A and M focus modes, forward mounted AF-on/AF-L/Focus Recall buttons, three-stop VR with normal and active modes, Nano crystal coatings and lightweight carbon-fibre lens hood. It's all wrapped up in a padded case.

Handling is similar to that of the Nikon 300mm f/2.8, except, of course, that this lens features an additional zoom ring, which

is positioned towards the rear. The lens itself is also narrower, slightly longer and a bit lighter. One other difference is that the 200-400mm has a more conventional VR on/off switch. Again, the front element is too large for the practical use of filters, so 52mm drop-in filters can be used in a slot towards the rear of the lens.

### Performance

Lab test results for sharpness weren't quite as inspiring as from the Sigma 120-300mm zoom lens but, in field tests, it delivered superb sharpness and contrast with remarkable consistency throughout the aperture and zoom ranges.



## Nikon AF-S 400mm f/2.8E FL ED VR £10,400, \$12,000

*The combination of a long 400mm focal length and a fast f/2.8 aperture comes at a price*

Compared with the Nikon and Sigma 300mm f/2.8 lenses on test, this one has an extra 100mm of telephoto reach with no trade-off in aperture reduction. The result is that it's the biggest, heaviest lens in the group, and by far the most expensive. You get all of the advanced autofocus options and handling characteristics found in the other two Nikon lenses, plus some extra features.

Fluorite elements ensure outstanding image quality while reducing the weight of the lens. A fluorine coating on the front element repels water and grime. A new 'Sport VR' mode enables easier tracking of moving targets through the viewfinder,

and ensures no reduction in maximum burst rate during continuous shooting. The lens also has an electromagnetically-controlled diaphragm, which delivers consistency in exposure settings during high-speed continuous shooting. And it comes in a tough flight case.

### Performance

CIPA testing gave a four-stop rating for the new VR system, at least in standard mode, and we found that this lens has the most consistent stabilisation of any lens in the group. Autofocus is blindingly quick and levels of sharpness edge ahead of every other lens on test. Performance is simply dazzling.

### Tech focus

24 elements in 17 groups; nine diaphragm blades; 1.95-2m closest focus distance; 52mm filter thread (drop-in); ring-type ultrasonic AF; three-stop optical stabiliser (CIPA); dimensions 124x366mm; weight 3.36kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★

WE SAY... All the quality of top prime lenses in a single package.

### Tech focus

16 elements in 12 groups; nine diaphragm blades; 2.6m closest focus distance; 40.5mm filter thread (drop-in); ring-type ultrasonic AF; four-stop optical stabiliser (CIPA); dimensions 160x358mm; weight 3.8kg



### NPhoto VERDICT

FEATURES ★★★★★  
BUILD QUALITY ★★★★★  
IMAGE QUALITY ★★★★★  
VALUE FOR MONEY ★★★★★

OVERALL ★★★★★

WE SAY... We rate it as the best 400mm prime in the world, bar none.

# IMAGE QUALITY IN FOCUS

Here are the lab test results for all the telephoto primes and zooms on test



**Sigma 150-600mm  
f/5-6.3 DG OS HSM | S**



**Nikon AF-S 80-400mm  
f/4.5-5.6G ED VR**



**Sigma APO 300mm  
f/2.8 EX DG HSM**



**Sigma 120-300mm  
f/2.8 DG OS HSM | S**

## SHARPNESS



■ It drops off towards the 600mm zoom setting but, at 400mm, sharpness is better than from the Nikon 80-400mm.

LAB TEST	
Sharpness at short (f/8)	<b>2027</b>
Sharpness at mid (f/8)	<b>2016</b>
Sharpness at long (f/8)	<b>1739</b>



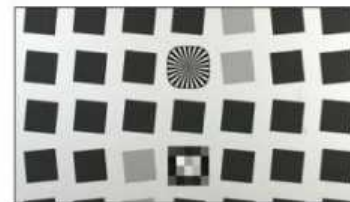
■ It's not a standout performer at either end of the zoom range, but it's very good through the middle of the range.

LAB TEST	
Sharpness at short (f/8)	<b>1898</b>
Sharpness at mid (f/8)	<b>2178</b>
Sharpness at long (f/8)	<b>1847</b>



■ Sharpness is disappointing, and worse than from the Sigma 150-600mm and Nikon 80-400mm zooms at 300mm.

LAB TEST	
Sharpness at short (f/8)	<b>N/A</b>
Sharpness at mid (f/8)	<b>N/A</b>
Sharpness at long (f/8)	<b>1914</b>



■ Unlike the Sigma 300mm prime, this delivers great sharpness even at wide apertures, throughout its zoom range.

LAB TEST	
Sharpness at short (f/8)	<b>2235</b>
Sharpness at mid (f/8)	<b>2157</b>
Sharpness at long (f/8)	<b>2031</b>

## FRINGING



■ There's more colour fringing than average at the short end, but performance is better at mid to long

LAB TEST	
Fringing at short (f/8)	<b>1.93</b>
Fringing at mid (f/8)	<b>0.58</b>
Fringing at long (f/8)	<b>1.08</b>



■ Fringing follows a similar path to the Sigma 150-600mm, but with slightly better results at either end.

LAB TEST	
Fringing at short (f/8)	<b>1.35</b>
Fringing at mid (f/8)	<b>0.56</b>
Fringing at long (f/8)	<b>0.77</b>



■ There's more pronounced colour fringing towards image corners than from any other lens in the test group.

LAB TEST	
Fringing at short (f/8)	<b>N/A</b>
Fringing at mid (f/8)	<b>N/A</b>
Fringing at long (f/8)	<b>2.4</b>



■ There's fairly little fringing at the short end of the zoom range, and it reduces even more at mid to long zoom settings.

LAB TEST	
Fringing at short (f/8)	<b>1.15</b>
Fringing at mid (f/8)	<b>0.41</b>
Fringing at long (f/8)	<b>0.4</b>

## DISTORTION



■ Pincushion distortion is restrained, but increases a little as you go from the short to the long end of the zoom range.

LAB TEST	
Distortion at short (f/8)	<b>0.64</b>
Distortion at mid (f/8)	<b>0.73</b>
Distortion at long (f/8)	<b>0.95</b>



■ There's very little pincushion at 80mm, but it's higher than average in the mid to long section of the zoom range.

LAB TEST	
Distortion at short (f/8)	<b>0.32</b>
Distortion at mid (f/8)	<b>1.07</b>
Distortion at long (f/8)	<b>1.20</b>



■ The relatively minimal distortion is a plus point for this lens, where it outperforms other primes on test.

LAB TEST	
Distortion at short (f/8)	<b>N/A</b>
Distortion at mid (f/8)	<b>N/A</b>
Distortion at long (f/8)	<b>0.34</b>



■ Marginally greater than from most competing lenses at the long end of the zoom range, but nothing to worry about.

LAB TEST	
Distortion at short (f/8)	<b>0.23</b>
Distortion at mid (f/8)	<b>0.68</b>
Distortion at long (f/8)	<b>1.26</b>

### IMAGE QUALITY VERDICT

Even in much more expensive company, the Sigma 150-600mm acquits itself very well.



### IMAGE QUALITY VERDICT

Despite its more limited focal length, image quality isn't much better than from the Sigma 150-600mm lens.



### IMAGE QUALITY VERDICT

Apart from good distortion control, image quality is average. Sharpness at the widest aperture is unimpressive.



### IMAGE QUALITY VERDICT

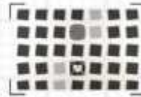
Superb image quality makes this a better buy than the Sigma 300mm with its f/2.8 maximum aperture.





## The tests explained!

We test lenses to their limits in three key areas of optical performance – sharpness, colour fringing and distortion



■ **Sharpness (high scores are better)**  
Figures are based on the Imatest SFRPlus chart. To ensure a level playing field, we checked the centre, mid and edge sharpness on a D600.



■ **Fringing (low scores are better)**  
Colour fringing tends to be worst at the extreme corners of the frame. To highlight how it affects each lens, we shot the Imatest SFRPlus chart.



■ **Distortion (close to 0 is best)**  
This test checks for barrel or pincushion distortion – the former tends to affect wide-angle lenses, whereas our group suffers mainly from pincushion.



**Sigma APO 500mm f/4.5 EX DG HSM**



■ The Sigma 500mm prime gives some poor scores for sharpness, and is similar to the Sigma 300mm at around f/4.5-5.6.

LAB TEST	
Sharpness at short (f/8)	N/A
Sharpness at mid (f/8)	N/A
Sharpness at long (f/8)	1794



■ Fringing is better controlled than in the Sigma 300mm, and more consistent throughout the aperture range.

LAB TEST	
Fringing at short (f/8)	N/A
Fringing at mid (f/8)	N/A
Fringing at long (f/8)	1.59



■ There's a little more pincushion than from the Sigma 300mm, but marginally less than from the Nikon 300mm.

LAB TEST	
Distortion at short (f/8)	N/A
Distortion at mid (f/8)	N/A
Distortion at long (f/8)	0.61

### IMAGE QUALITY VERDICT

There's no real improvement over Sigma's cheaper 150-600mm zoom lens for image quality.



**Nikon AF-S 300mm f/2.8G ED VR II**



■ The excellent sharpness drops off at the widest f/2.8, but it's vastly better than from the Sigma 300mm prime.

LAB TEST	
Sharpness at short (f/8)	N/A
Sharpness at mid (f/8)	N/A
Sharpness at long (f/8)	2224



■ There's very little fringing even in extreme image corners, as with the Nikon 400mm f/2.8 lens.

LAB TEST	
Fringing at short (f/8)	N/A
Fringing at mid (f/8)	N/A
Fringing at long (f/8)	1.59



■ Pincushion is marginally greater than with the other prime lenses in the group, but still of a very low order.

LAB TEST	
Distortion at short (f/8)	N/A
Distortion at mid (f/8)	N/A
Distortion at long (f/8)	0.67

### IMAGE QUALITY VERDICT

Overall image quality is of the highest standard, in keeping with the professional aspirations of this lens.



**Nikon AF-S 200-400mm f/4G ED VR II**



■ Lab scores aren't as superlative as some of the primes, but performance is excellent for such a flexible zoom range.

LAB TEST	
Sharpness at short (f/8)	2032
Sharpness at mid (f/8)	2045
Sharpness at long (f/8)	1913



■ Colour fringing is well restrained at the shortest end of the zoom and results get better still at mid to long zoom settings.

LAB TEST	
Fringing at short (f/8)	2.04
Fringing at mid (f/8)	1.55
Fringing at long (f/8)	1.13



■ There's very little pincushion at the 200mm focal length and practically none at all through the rest of the zoom range.

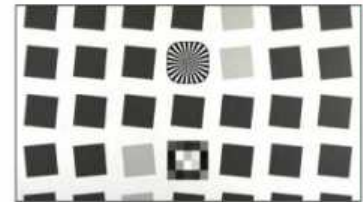
LAB TEST	
Distortion at short (f/8)	0.32
Distortion at mid (f/8)	0.2
Distortion at long (f/8)	0.2

### IMAGE QUALITY VERDICT

Superb image quality is assured by this excellent zoom lens, which rivals or beats many top-notch prime lenses.



**Nikon AF-S 400mm f/2.8E FL ED VR**



■ It's the outright winner for sharpness in the group, and that sharpness is maintained well across the whole frame.

LAB TEST	
Sharpness at short (f/8)	N/A
Sharpness at mid (f/8)	N/A
Sharpness at long (f/8)	2311



■ There's very little colour fringing at most apertures and it practically disappears completely at f/2.8 to f/4.

LAB TEST	
Fringing at short (f/8)	N/A
Fringing at mid (f/8)	N/A
Fringing at long (f/8)	1.6



■ The very small amount of distortion is hard to spot. It's lower than in the Nikon 300mm and Sigma 500mm primes.

LAB TEST	
Distortion at short (f/8)	N/A
Distortion at mid (f/8)	N/A
Distortion at long (f/8)	0.47

### IMAGE QUALITY VERDICT

Spectacular image quality. This lens is arguably the best super-telephoto prime of all time.



SHARPNESS









FRINGING

DISTORTION



## GO WILD!

### HOW THE LENSES COMPARE

NAME								
	<b>Sigma 150-600mm f/5-6.3 DG OS HSM   S</b>	<b>Nikon AF-S 80-400mm f/4.5-5.6G ED VR</b>	<b>Sigma APO 300mm f/2.8 EX DG HSM</b>	<b>Sigma 120-300mm f/2.8 DG OS HSM   S</b>	<b>Sigma APO 500mm f/4.5 EX DG HSM</b>	<b>Nikon AF-S 300mm f/2.8G ED VR II</b>	<b>Nikon AF-S 200-400mm f/4G ED VR II</b>	<b>Nikon AF-S 400mm f/2.8E FL ED VR</b>
WEBSITE	sigmaphoto.com	nikon.com	sigmaphoto.com			nikon.com		
STREET PRICE (UK, USA)	£1500, \$2000	£1900, \$2700	£2280, \$3400	£2700, \$3600	£3760, \$5000	£4000, \$5900	£4900, \$7000	£10,400, \$12,000
EFFECTIVE FOCAL LENGTH (35mm EQ)	225-900mm	120-600mm	450mm	180-450mm	750mm	450mm	300-600mm	600mm
APERTURE RANGE	f/5-6.3 to f/22	f/4.5-5.6 to f/32-40	f/2.8 to f/32	f/2.8 to f/22	f/4.5 to f/32	f/2.8 to f/22	f/4 to f/32	f/2.8 to f/22
OPTICAL STABILISER	Yes	Yes	No	Yes	No	Yes	Yes	Yes
AUTOFOCUS ACTUATOR	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)	Ultrasonic (ring-type)
FOCUS RANGE LIMITER	Yes	Yes	No	Yes	No	Yes	Yes	Yes
INTERNAL ZOOM	No	No	N/A	Yes	N/A	N/A	Yes	N/A
MIN FOCUS DISTANCE	2.6m	1.75m (1.5m MF)	2.5m	1.5m to 2.5m	4.0m	2.3m (2.2m MF)	2.0m (1.95m MF)	2.6m
MAX MAGNIFICATION	0.2x	0.2x	0.13x	0.12x	0.13x	0.16x	0.27x	0.14x
WEATHER SEALS	Yes	Sealed mount	No	Yes	No	Yes	Yes	Yes
FILTER SIZE	105mm	77mm	46mm (drop-in)	105mm	46mm (drop-in)	52mm (drop-in)	52mm (drop-in)	40.5mm (drop-in)
DIMENSIONS / WEIGHT	121x290mm / 2.86kg	96x203mm / 1.57kg	119x215mm / 2.4kg	121x291mm / 3.39kg	123x350mm / 3.15kg	124x268mm / 2.9kg	124x366mm / 3.36kg	160x358mm / 3.8kg
FEATURES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BUILD QUALITY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
IMAGE QUALITY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
VALUE FOR MONEY	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

## THE WINNER IS...

### Nikon AF-S 400mm f/2.8E FL ED VR

*Big lenses cost big money, but the Nikon 400mm is expensive by any reckoning*

Quality usually costs, but the Nikon 400mm f/2.8 is fiendishly expensive. It also happens to be one of the best camera lenses ever made, combining high-tech thrills like ultra-fast autofocus and highly effective optical stabilisation with spectacular image quality. For a big and heavy lens, handling is wonderfully natural. It's the best lens on test, but if you can live with one that's an f-stop slower, the Nikon 200-400mm is almost as good and more versatile, delivering similar performance to top-notch 200mm, 300mm and 400mm primes in a single package.

The Nikon 300mm f/2.8 is another top contender and much less expensive than the

400mm prime. For less outlay, the Sigma 150-600mm S-class lens rules the roost for maximum telephoto reach while combining impressive build and image quality at a much more affordable price. ■

**What's good:** Packed with advanced features, unbeatable build and image quality.

**What's bad:** Massively expensive compared with all other lenses in the group, but you get what you pay for.

**Our verdict:** It's simply the best 400mm lens you can buy – but it's a big, hefty beast.

**OVERALL** ★★★★★



## TOP RUNNERS-UP

### Nikon AF-S 200-400mm f/4G ED VR II

**What's good:** Superb image quality.

**What's bad:** An f-stop slower than the Nikon 300mm and 400mm prime lenses.

**Our verdict:** An excellent choice if you'll sacrifice an f-stop for zoom versatility.



### Nikon AF-S 300mm f/2.8G ED VR II

**What's good:** Almost as good as the Nikon 400mm at less than half the price.

**What's bad:** Lacks a 'Sports VR' mode.

**Our verdict:** It's a superb lens, but for some it may lack a little reach.



### Sigma 150-600mm f/5-6.3 DG OS HSM | S

**What's good:** Amazing focal length, impressive build and image quality.

**What's bad:** Relatively slow f/6.3 widest aperture at the long end of the zoom range.

**Our verdict:** It's not in the same class as Nikon's finest lenses, but unbeatable value.





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# MINI TEST

# VARIABLE ND FILTERS

*Capture long exposures without the hassle of conventional filter systems*

**N**eutral density filters are essential for landscape photographers as they enable longer exposure times, smoothing out flowing water and clouds.

In urban settings, moving people and vehicles can be blurred or even made to disappear. The filters also appeal to portrait photographers, as they enable them to set wide apertures (and so blur our backgrounds) even in very bright conditions.

ND filters generally come as part of a filter kit. For ease of use, a great alternative is a variable ND filter – these are basically two polarisers fixed together to form one screw-on filter. As they're rotated, the elements restrict the amount of light that is able to pass through them, and therefore extend the exposure time. Despite the ND title, many are simply known as faders, as they do produce slight colour casts (so aren't strictly 'neutral'), and if they're rotated too far, almost all will reveal a darkened X, which will appear on your image. Here we see how six screw-on variable ND filters perform. ■

## TURN TO THE DARK SIDE

*A variable ND should extend exposure times without degrading the image. Here's how to pick the right one*

### 01 The X factor

Almost all variable NDs will create a dark X across the image if rotated too far. This is caused by having two circular polarisers positioned together and is unavoidable. However, a good variable ND filter will have a series of markings showing its usable range.

### 02 Colour casts

Variable ND filters can affect the overall colour cast of the image, usually leaning towards blue, although some will warm images.

### 03 Vignetting

The vignette effect caused by filters is common to polarisers and variable NDs. The intensity varies greatly as the strength of the filter is increased, so look for one which keeps this to a minimum.

### 04 Going long

Variable ND filters can extend exposure times by up to 10 times, but long exposures can amplify issues such as vignetting and the dark X, so watch out for this.

### 05 Size and depth

The build and size of variable NDs varies greatly. Extra depth can be handy on cold winter mornings, as it makes filters easier to adjust, but it can also mean that a filter is more prone to glare.

## Hama Grey Filter Vario ND2-400 77mm £40, \$65

[www.hama.co.uk](http://www.hama.co.uk)

Hama's slimline variable ND filter is well made for the price, with a smooth rotation between the two elements and just enough friction to hold its position when set. A slight textured edge to the front element makes adjustment easy, and there are clear markings between the minimum and maximum points.

At the minimum setting the filter enables you to lengthen the exposure by one stop and influences colour with a slight coolness. In our tests, we found that increasing the intensity to the maximum marked setting produces a heavy black X, but pull back a little and you can extend exposure times by almost eight stops (although images do need retouching to remove the colour cast). A setting of around five stops gives the cleanest results.



To avoid vignetting the front lens is larger than the back one, so you'll need an 82mm lens cap

### NPhoto VERDICT

**PROS:** Cheap compared with other variable NDs; well made  
**CONS:** A better case is required in order to keep the filter safe  
**WE SAY:** A good price if you want a filter for occasional use

**OVERALL** ★★★★★

## Cokin Pure Harmonie ND X 77mm £130, \$166

[www.cokin.co.uk](http://www.cokin.co.uk)

Arriving in a quality plastic case, the Cokin ND X is an extremely slim, lightweight screw-on filter with a premium feel. The front element rotates smoothly, with a good amount of friction holding the filter precisely where you want it to be set.

At the minimum setting you can expect an exposure reduction of one stop, and the filter to add just a touch of warmth. Rotating to the maximum marker (eight stops) creates a dark X, but ease off and you can extend your exposure times by six stops (taking a 1/60 sec exposure up to a full second) and still get usable images. Red and blue colour casts do affect the image, but overall contrast and tone are good and the casts are easily corrected. In our tests, we found that four stops provides the optimum setting.



The Cokin is extremely slim and light, making it ideal if you like to travel as light as possible

### NPhoto VERDICT

**PROS:** Good-quality filter that comes in a protective case  
**CONS:** Stronger colour casts than some of the others  
**WE SAY:** Good quality, plus decent exposure extension

**OVERALL** ★★★★★

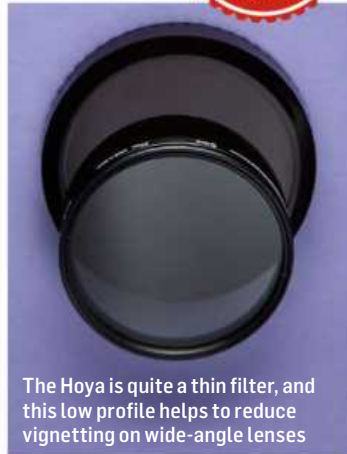


## Hoya Variable Density 3-400 77mm £130, \$130

www.hoyafilter.com

This variable ND features front and side-edge texturing that makes it easy to adjust the filter's intensity with just one finger. The friction between the two elements feels looser than with the other filters on test, and while it holds in position fine, it just doesn't have the smoothness that you'd expect from a high-quality product. It does, however, arrive in a decent filter case which should be sturdy enough to protect it if you throw it into a kit bag.

At the minimum setting the Hoya filter will enable exposure times to be extended by 1.5 stops, while rotated to maximum (nine stops) it creates a dark blue X. However, you can expect seven stops of usable exposure-time extension, and image quality is excellent (though images will need some processing).



The Hoya is quite a thin filter, and this low profile helps to reduce vignetting on wide-angle lenses

### NPhoto VERDICT

**PROS:** Produces good quality images even at seven stops  
**CONS:** Images need processing to remove slight colour casts  
**WE SAY:** Excellent image quality – after post-processing

**OVERALL** ★★★★★

## B+W ND-Vario MRC Nano 77mm £207, \$270

www.bpluswfilters.co.uk

Compared with the other filters on test the B+W offering stands out, and not just because of its price. The Max and Min markers actually state the maximum and minimum *usable* settings, so you can be sure that whenever the front element is between these you'll get a decent shot. The filter also features stoppers so the front ring can't rotate completely, stopping at either the Max or Min point.

At the minimum setting you can extend exposures by a stop, and at the maximum five stops. This is conservative compared with the other filters on test, and may mean you wouldn't want to use it in very bright conditions. Image quality, however, is exceptional, with little or no colour cast evident, and good tone and contrast throughout the image.



While this filter offers only one to five stops of extension, it can be combined with other B+W filters

### NPhoto VERDICT

**PROS:** Exceptionally well made with little to no colour casting  
**CONS:** It only offers five stops of exposure extension  
**WE SAY:** Good quality, but costly for what it delivers

**OVERALL** ★★★★★

## Gloxy ND2-ND400 MKII £68, \$80

www.gloxy.co.uk

Gloxy's variable ND filter is one of the larger ones in our group test, and we felt its extra depth gives it a nice feel when mounted onto the front of a lens, though of course you'd want to watch out for vignetting when using it on a wide-angle lens.

The Gloxy performs well, providing just over a stop of exposure extension at its minimum setting. Rotating through to the maximum marker produces a heavy blue X across the image; ease off and you can get up to eight stops of exposure extension, but this still causes heavy colour casts and the images lack clarity. Reducing the intensity helps with colour, contrast and the overall quality of the captured image greatly, but the effect of shading across the image is noticeable at all settings.



The depth of this filter, which is slightly larger than some of the others, makes it easy to use

### NPhoto VERDICT

**PROS:** Well priced, nice size and decent exposure extension  
**CONS:** Can cause heavy colour casts and heavy contrast  
**WE SAY:** Good at mid to low settings, but there is shading

**OVERALL** ★★★★★

## Kenko PL Fader ND3-ND400 £100, \$302

www.kenkoglobal.com

The Kenko is a relatively deep filter, similar in design to the Gloxy but with the addition of an optional knob that can be screwed in to assist with the easy rotation of the front element. This is a nice design feature, but the rotation itself isn't quite as smooth as with some of the other filters on test. However, the overall build quality is good.

In use the Kenko filter provides a stop of exposure extension at the minimum setting, and a blue X across the image at the maximum marked setting. It's possible to extend exposure times by up to around eight stops and get usable images, and colour rendition, tone and contrast are all pretty good. However, the extra depth does make this filter prone to the effects of flare. In our tests, we found that the best results were achieved at around four stops.



We were really pleased with the colours from this filter, but you have to watch out for flare

### NPhoto VERDICT

**PROS:** The screw-in knob is nice; excellent colour rendition  
**CONS:** The depth does make the filter prone to flare  
**WE SAY:** A good combination of extension, colour and price

**OVERALL** ★★★★★

## [MINI TEST]

## MONOPODS

*Here's our round-up of six streamlined supports featuring some clever tech*

**E**ven with your Nikon's Vibration Reduction enabled, you run the risk of blur from camera shake if you shoot handheld in low light or at long focal lengths. Ramping up the ISO sensitivity is one solution, but for sharp shots with minimal image noise, try using a monopod for some extra support. With only one leg to extend rather than three, they can be quicker and more versatile than a standard tripod.

Monopods are also extremely useful on lengthy assignments where your hands and neck will get sore if you carry a camera all day, but you need more mobility than a tripod will permit – motorsports shoots are a prime example of this.

Fewer legs means you can travel light, with many monopods weighing in at under a kilogram, so they're a good option when keeping weight down is critical, too. There's no need to sacrifice height, though, as all the legs we've selected will top out at over 1.6 metres, while some pack down to a third of that size. What's more, all these monopods have a special something in store, whether it be flip-out feet for added grip when you're off the beaten track or simplified extension systems to help with quick-fire shooting. There's an option to suit every budget, so you're sure to find the perfect solution for banishing blur. ■

## SUPPORT GROUP

*With monopods, don't simply look for the same things as you'd want in a tripod. Here are a few things to consider...*

## 01 Size matters

There's no point in carrying a monopod that's as cumbersome as a tripod, especially if you need to travel light or stay mobile.

## 02 The need for speed

Conventional leg extension clamps get the job done, but if you're in a hurry, as you might be when shooting sports or wildlife, a single-clamp design will have you set up and shooting faster.

## 03 Stabilising influence

Monopods with three legs? Flip-out feet aren't designed so your monopod can do double duty as a tripod, but they will stop your monopod slipping on uneven ground.

## 04 Flexible friend

Even when they're sitting on three feet, many monopods can still pivot and pan with ease thanks to a ball-head base. Some also lock for better stability.

## 05 Extra features

Whether you're after a monopod/walking pole combo or a leg that'll moonlight as a dolly for shooting video, there's something with those added extras out there for you.

Manfrotto 560B-1  
£99, \$170

www.manfrotto.com

At just 66cm collapsed, the 560B-1 is one of the smaller sticks in our bunch, yet it still features three fold-out feet for better grip on loose surfaces. They really do make a difference when you're off the beaten track.

The leg and feet connect via a small ball-and-socket joint, which is supposed to enable smooth panning. However, we found it to be prone to jerking and sticking. Frankly, it might as well be lubricated with lumpy custard. There's no locking mechanism either, so if you don't hold on to your Nikon, it will tip over.

The four-section leg is nothing special, either. The skinny tubing it's made from helps keep the weight down to a respectable 1.2kg, but it restricts the payload to just 2kg, making this the weakest monopod on test.



A lightweight Nikon will sit pretty on this leg, but its poorly-designed base is a real bugbear

## NPhoto VERDICT

**PROS** Small and light, with a rugged head and flip-out feet  
**CONS** Won't cut it with a bulky FX and heavy lens combo  
**WE SAY** Does the job, but you can do better for the money

## OVERALL

Sirui P-324S  
£270, \$265

en.zssirui.com

At 1.45kg the Sirui is the most portly platform in our test group, and is actually heavier than some travel tripods – not great if you want to travel light. The upside of such bulk, though, is outstanding build quality – this monopod is constructed from eight-layer carbon fibre tubing that'll stand strong under a hefty 10kg of kit.

Like the Rollei Mogopod (above right), the Sirui has a friction-adjustable ball-head base which can be locked to keep the stand upright, while up top the grip pans smoothly through 360 degrees, so it's great for tracking animals or vehicles. Three twist-lock extension clamps enable the monopod to reach a towering 175cm, but drop things down and spread the three large support legs, and the P-324S will also act as a table-top tripod.



You've really got to get your hands on this leg to appreciate its stellar design and build quality

## NPhoto VERDICT

**PROS** The quality, performance and versatility justify the price  
**CONS** Not the fastest monopod to set up, and pretty heavy  
**WE SAY** Superb quality – an ideal partner for an FX Nikon

## OVERALL





## ESSENTIAL KIT

## Manfrotto 685B Neotec £125, \$190

▶ [www.manfrotto.com](http://www.manfrotto.com)

Most monopods are convenient, but the 685B goes one better and ditches conventional leg clamps in favour of a super-speedy pistol grip design. Simply squeeze the trigger and the three-section leg will fall out and lock wherever you release your grip. There's even a secondary safety trigger to prevent accidental collapse.

This is the only monopod here to have a conventional base with no flip-out feet. Instead, there's a single pedal that enables you to hold the base steady with your foot and then extend the monopod with one hand. You'll want to keep this for use on stable ground.

Large-diameter tubing will hold a hefty 8kg of kit at up to 170cm, yet the monopod itself weighs in at just 1.08kg. The collapsed size is not as compact as some of its competitors, though, at 74.5cm.



It's not cheap or particularly versatile, but the Neotec sure is fast to set up and start using

### NPhoto VERDICT

**PROS** Super-speedy support that won't weigh you down

**CONS** Not the most compact option; single foot

**WE SAY** Just the ticket for capturing fast-paced action

**OVERALL** ★★★★★

## Rollei Mogopod 1 £143, \$222

▶ [www.rollei.com](http://www.rollei.com)

With its grippy foam padding, the Mogopod looks like it belongs in a gym rather than beneath your Nikon, but that coating hides some clever features. A single twist-lock extension clamp automatically opens and closes all three leg sections, making set-up a breeze. It's also capable of supporting a reasonable 3.5kg load.

At the base is a smooth ball head with a knob that enables you to adjust friction and even lock the head completely, and attached to this are three flip-out legs. If you shoot video, these can be unscrewed and replaced with an optional pair of skate wheels so you can record smooth tracking shots. Get a second set of wheels for the other end and the Mogopod can even double as a dolly, though note that the optional accessories don't come cheap.



Fed up with regular monopods? The Mogopod's innovative design stands out from the crowd

### NPhoto VERDICT

**PROS** Quick and easy to use, for video as well as stills

**CONS** The 77cm closed length is on the large side

**WE SAY** If you've got space for it, it's a pleasure to use

**OVERALL** ★★★★★

## Vanguard VEO AM-264TR £80, \$100

▶ [www.vanguardworld.co.uk](http://www.vanguardworld.co.uk)

Not only is this the least expensive monopod of our six, it's also the most portable, tipping the scales at just 900g and boasting a collapsed length of 56.5cm. It'll still extend to a useful 163cm, though, and it even shapes up well as a walking pole thanks to an ergonomic handle.

The basic fixed head won't permit panning, so you'll have to rotate on the stiff ball-and-socket base to track a subject, but at least this can be locked to keep the Veo vertical. It probably wouldn't be your first choice for shooting video or photographing moving subjects, though.

You also get a trio of flip-out feet which are useful for stabilising the monopod on loose terrain, but they're less effective on sloping surfaces thanks to the ball joint's restricted articulation.



Small touches like the domed cover cap for the head make this a comfortable walking companion

### NPhoto VERDICT

**PROS** Compact and affordable; can double as a hiking pole

**CONS** Not the slickest option, especially for video capture

**WE SAY** Streamlined, but not the most useful monopod

**OVERALL** ★★★★★

## Velbon Pole Pod II £89, \$195

▶ [www.velbon.com](http://www.velbon.com)

Here's a monopod that's more like a tripod with a very long centre column. The flip-out legs are a two-section design with three angle options to help your Nikon stay upright on sloping ground.

With the feet fully extended and spread, the Pole Pod II is stable enough to use as a freestanding tabletop tripod, or you can mount your Nikon straight to the base and use it as a mini tripod. Refit the leg and you've got the tallest vantage point available from any monopod in this test, reaching 179.2cm at full stretch – and the ball head means you can shoot from all angles.

The Pole Pod II is remarkably light at 960g, but that's partly due to some cheap-feeling materials that limit the maximum payload to 2.5kg, so you wouldn't want to mount anything heavier than a D7200 on it.



Is the Pole Pod II a monopod? Or with those two-section legs, is it a tripod? You decide!

### NPhoto VERDICT

**PROS** Light yet tall; versatile feet and a proper ball head

**CONS** Not best suited to video capture; limited maximum load

**WE SAY** A fine budget choice for shooting with lighter Nikons

**OVERALL** ★★★★★

## MINI TEST

# ONLINE PRINT SERVICES

*Photo labs are more cost effective than home printing – six of the best on test*

**O**wning a high-quality photo printer is convenient, but when you weigh up the space and cost, it doesn't really make sense. Online printing services produce prints at such high quality that unless you are a seasoned home printer making lots of copies, online lab services are a far more sensible solution. They enable you to upload your pictures, select paper type and size, and then sit back and wait for them to arrive – no faffing around finding the correct paper size or cleaning blocked heads.

In this test we've taken a look at some of the largest online print services, putting big online names up against two pro labs. We selected 12 images to be printed on glossy 5x7-inch paper, including black-and-white, sepia, skin tone, overly processed and, of course, plain colour photographs to see how each service dealt with the files. Print quality is, naturally, the most important factor, but quality of service is also important, so we looked at the whole ordering process from uploading images to the point where the prints reached our hands. ■

## GET THE PICTURE

*It's not just the ink and paper options that differ – all of the following also vary from lab to lab...*

### 01 Upload process

Each lab's upload process will vary greatly, from simple browser-based uploading to more complex ordering services.

### 02 Paper type and finish

All labs offer a good variety of paper sizes, though the finishes that are offered can be a bit limited. If you're after a matt finish, for example, you may have to spend a bit more.

### 03 Cost per print

Print costs reflect both the paper and print quality. Think about your intended use for your pictures; if you want something to hang on your wall then pay the extra for higher quality.

### 04 Postage or collection

All services in this test offer postage, but when there's an outlet nearby you can save money by picking your images up. However, having a store close doesn't guarantee local collection.

### 05 Saved orders

If you know that you're going to repeat orders, look for a lab that enables you to save orders. This can be a good time saver and also enables you to keep orders and invoices organised.



## Jessops

▶ £0.20 per 5x7-inch print ▶ [www.jessops.com](http://www.jessops.com)

UK high street name Jessops has relaunched, as has its online print service. Once you're registered with the site, images can be quickly uploaded. Options next to each image thumbnail enable you to pick a size and border. Unfortunately only gloss prints are available.

We ordered our prints on a Monday afternoon and they were ready for collection on the Thursday. Print quality was good, with natural, if cool, colour that suits portraits. Highly saturated images can lack vibrancy, however.

Mono prints showed good detail and tonal gradation. The price of the prints is exceptional.

### NPhoto VERDICT

**PROS** Price; easy online user interface; in-store collection

**CONS** Gloss-only printing; lightweight paper

**WE SAY** By far the best of the cheaper online processors

### OVERALL



## Photobox

▶ £0.20 per 5x7-inch print ▶ [www.photobox.com](http://www.photobox.com)

Registering with, and uploading images to, Photobox is extremely straightforward. The interface automatically places uploaded files into an album, which is a nice touch. Clicking 'Order Prints' takes you through to a good selection of sizes, finishes and borders.

Our order was placed on Monday afternoon and arrived on Friday. Print quality, however, was only just acceptable. In our portrait image, skin tones suffered from a red tinge, while our sepia-toned elephant photo had soft edges and

detail when compared with prints from the other labs. On other images, edge fringing was visible.

### NPhoto VERDICT

**PROS** Intuitive and fast online interface and fast service

**CONS** Print quality is lacking

**WE SAY** Despite the smooth ordering service, the quality of the prints isn't great

### OVERALL







## Loxley Colour

▶ £0.60 per 5x7-inch print ▶ [www.loxleycolour.com](http://www.loxleycolour.com)

Loxley has created an app that enables you to order prints, but this actually makes registration and starting your ordering process complex. Once you get through to ordering and sending your prints, however, the speed and level of service are unparalleled.

We ordered the prints at the end of our testing day due to the time it took to register, but they arrived the next day, making it by far the fastest service. The quality really stood out, too: skin tones and print colours showed plenty of tonal

gradation and detail. Monochrome prints were exceptional and the sepia tone was spot on.

### NPhoto VERDICT

**PROS** Super-fast service; best-quality prints in the group  
**CONS** App and ordering process takes a while to work out  
**WE SAY** Stick with it as this service outshines all others

**OVERALL** ★★★★★



## One Vision Imaging

▶ £1.30 per 5x7-inch print ▶ [www.onevisionimaging.com](http://www.onevisionimaging.com)

Registering with One Vision Imaging requires you to create a username rather than use your email address to log in like the other services on test. The upload process is straightforward, but setting up collections and navigating the admin area aren't quite as intuitive as they should be.

After placing our order on Monday afternoon, prints arrived on the Friday in a high-quality card envelope. They boasted vibrant colours, plenty of tone and fine edge detail. Paper was heavier

than from competing labs, and the prints were more appealing than those from everyone bar Loxley.

### NPhoto VERDICT

**PROS** Quality is limited only by the quality of your files  
**CONS** Very expensive price per print; high postage costs  
**WE SAY** We love the quality, but the cost is rather high

**OVERALL** ★★★★★



## Snapfish

▶ £0.19 per 5x7-inch print ▶ [www.snapfish.com](http://www.snapfish.com)

Snapfish is one of the longest-serving online labs, and its browser interface is antiquated. For example, once a new set of images is uploaded into a new album you have to manually refresh the page in order for that album to appear (when using Safari), and throughout the order process you are prompted at every step to order something else.

Prints ordered on Monday arrived on Friday, and quality was generally good, but our field and seascape images showed a lack

of tonal gradation and detail. Our black-and-white and sepia images both reproduced well, though.

### NPhoto VERDICT

**PROS** Good quality (apart from high-saturation prints)  
**CONS** Awful browser interface that's unpleasant to use  
**WE SAY** Good – if you can put up with the ordering process

**OVERALL** ★★★☆☆



## Tesco

▶ £0.20 per 5x7-inch print ▶ [www.tescophoto.com](http://www.tescophoto.com)

Tesco's browser interface is a pleasure to use, and enables you to place your order without fuss and with plenty of size options. However, you're unable to order matt prints online. Tesco does give you the option to collect your photos in store, but only from branches with a photo lab.

Tesco received the order on Monday afternoon and our prints arrived on Friday. They were quite desaturated, however, with lacklustre colours and a lack of detail. The test chart showed

slight banding, and colours looked muddy. This washed-out look was present across all 12 images.

### NPhoto VERDICT

**PROS** Interface is easy to use  
**CONS** Photographs are desaturated and washed out  
**WE SAY** Prints lack the brightness of those from the other labs in this test

**OVERALL** ★★★☆☆

## [MINI TEST] GIMBAL HEADS

*If you need to support a bulky set-up, no other type of tripod head will do*

**T**raditional ball tripod heads are versatile, and a geared head is great for precision work. But when it comes to supporting full-frame bodies and long telephoto lenses and swinging them around with consummate ease, you need a big head... or, rather, your tripod does.

Simply using a larger ball head isn't ideal, as having the weight of a 400mm-plus telephoto lens and an FX Nikon perched on top means a precarious balancing act. A gimbal head enables you to lower your Nikon's centre of gravity so it effectively hangs alongside the head, rather than sitting on top.

When setting up, you'll need to spend a minute or so aligning your lens so it balances on the head's mounting plate; and if you go for a gimbal with vertical adjustment, be sure to set this so the centre line of the lens is parallel with the gimbal's tilt axis. Once you've found the sweet spot, your Nikon and lens will be perfectly balanced, and should feel almost weightless.

Here we've selected five heads. All use the same basic design, but as we'll see, the details separate the best from the rest... ■

### HEADS UP!

*Gimbal heads all look similar, and work in similar ways. However, watch out for these subtleties before you buy*

#### 01 Vertical adjustment

A gimbal without vertical adjustment will do the job, but you'll need it in order to get the feeling of complete weightlessness.

#### 02 Precision engineering

Loosening the clamps locking the pan base and tilt arm on cheaper gimbals can introduce slack and wobble in the joints. Better designs will have tighter tolerances.

#### 03 Large controls

Wildlife photography isn't just a fair-weather activity, so be sure your gimbal of choice has large controls that are easy to grip in the wet or cold, and while wearing gloves.

#### 04 Standard plates

All the heads we've featured use the widely-compatible Arca-Swiss mounting plate standard. Go for a gimbal with a long plate and you'll also get more scope for adjustment.

#### 05 Stable mate

There's no point in buying a great gimbal if you'll be mounting it on a travel tripod. Stout, rigid legs are a must, even if the combined weight will be a pain on the go.

## Benro GH3 £339, \$425

▶ [www.benro.com](http://www.benro.com)

Gimbal heads don't tend to stray from a fairly standard design, but the GH3 stands out by being fully collapsible, with the main gimbal arm split into two pieces for more compact storage. It's a neat trick, although it doesn't make that much difference in the real world. But at least rigidity isn't compromised, as the GH3 will stay strong under a hefty 25 kilograms of kit. Compactness doesn't equal lightness though, as at 1.8 kilograms, this is one of the heavier options here.

As with most gimbal heads, the GH3 incorporates an Arca-Swiss quick-release mounting plate and there's lots of vertical adjustment. Large, grippy locking knobs are easy to use when wearing gloves and lock solidly, while also undoing without introducing any play into the pan or tilt joints.



If space is at a premium, this collapsible gimbal is ideal

### NPhoto VERDICT

**PROS:** Collapsible, fully-featured design  
**CONS:** Relatively heavy, with a stiff and slightly jerky motion  
**WE SAY:** A clever, adjustable gimbal at a reasonable price

**OVERALL** ★★★★★

## ProMediaGear Katana £563, \$750

▶ [www.promediagear.com](http://www.promediagear.com)

The Katana looks more like a piece of military hardware than a camera support, thanks to its macho design and huge 33cm height. A load capacity of 'just' 23 kilograms isn't especially impressive, but superb build and material quality give the impression it could hold more. However, at 2.2 kilograms, this is the heaviest gimbal in our group.

The top-notch build quality also extends to the tilt and panning motion, which is perfectly smooth and has no bearing slack when the locking knobs are undone. When tightened, these will hold your Nikon steady, and are large enough for easy use in all weathers, plus they can be repositioned for easier access. The fact that it's so tall also means there's plenty of vertical adjustment to perfectly balance even the largest lens.



Extremely large and sturdy, this is one for well-equipped pros

### NPhoto VERDICT

**PROS:** Uncompromising build and material quality  
**CONS:** Pricey; few set-ups need such a large, heavy head  
**WE SAY:** Worth the money if you need to support very bulky kit

**OVERALL** ★★★★★



## LensMaster Gimbal RH2

£148, \$230

www.lensmaster.co.uk

At less than half the price of any of our other gimbal options, LensMaster appears to be on to a winner with the RH2. You still get solid, aircraft-grade aluminium construction with a choice of two powder-coated finishes. Payload capacity is also very respectable at 45 kilograms, yet the gimbal's 1.21-kilogram weight is only beaten by the Nest head (right).

However, there are some cost-cutting compromises. Most obvious is the lack of vertical adjustment, which, although not a major drawback, does mean you can't get the perfect weightless balance that other heads provide. The pan and tilt locking clamps are slightly flawed, too. The latter doesn't lock especially tightly and the design of both clamps means undoing them also separates the joints between components.



There's no vertical adjustment here, but it's a bargain nonetheless

### NPhoto VERDICT

**PROS:** Well priced and well made, yet also quite light

**CONS:** No vertical adjustment; substandard clamp design

**WE SAY:** Not perfect, but a decent budget option

**OVERALL** ★★★★★

## Nest NT-530H MK II

£300, \$467

www.nest-style.com

Tripods are often made from carbon fibre, so why not gimbal heads? This is the material of choice for the NT-530H MK II, which has a load-carrying capacity of 25 kilograms. At 1.16 kilograms it's not substantially lighter than similarly-sized aluminium options, but this is still one of the lightest gimbals you can buy.

Lightweight doesn't mean no-frills, though, as there's good vertical adjustment and a long Arca-Swiss lens plate is included, giving plenty of balancing adjustment. However, while the tilting rotation is smooth and precise, some bearing slack is apparent when loosening the panning clamp. The clamps themselves are wrapped in fairly smooth, leather-like material that isn't grippy enough for easy adjustment in the wet or cold.



Ten layers of carbon fibre are used in the Nest head's construction

### NPhoto VERDICT

**PROS:** Strong yet light; versatile mounting plate

**CONS:** Some slack in pan base; locking knobs not very grippy

**WE SAY:** Capable, though its drawbacks could be frustrating

**OVERALL** ★★★★★

## Wimberley Head WH-200 Version II

£520, \$595

www.tripodhead.com

Wimberley has a strong reputation in the gimbal head world, and the WH-200 upholds it. It uses the same basic design as most rivals and though there are few frills, it nails the basics. There's plenty of vertical adjustment, yet the head is still fairly compact at 23.5cm tall and weighs 1.4 kilograms.

Panning and tilt rotation are smooth and can also be locked completely steady by grippy, ergonomic knobs when required. These also control the friction resistance in each joint, which is progressively adjustable.

The head uses an Arca-Swiss lens mount, and Wimberley also offers replacement low-profile feet to help balance lenses with taller than average feet.

Ultimately the Katana gimbal does give you more for the money, but this is the best all-rounder.



This is a great all-rounder, not too large but very adjustable

### NPhoto VERDICT

**PROS:** Top quality; easy to use; wide lens compatibility

**CONS:** Expensive compared to equally well-made heads

**WE SAY:** Aside from the cost, this is a great gimbal

**OVERALL** ★★★★★



### Balancing act

Adjusting your camera and lens's position on the mounting plate enables you to balance heavy kit combinations for maximum stability

### Ups and downs

Not all gimbal heads allow vertical adjustment, as it's not essential to overall performance – though it is what will give you the perfect 'weightless' feel

### Lock stock

The larger the locking knobs, the easier they are to use when it's cold and wet

## [MINI TEST]

## FLASHGUN MODIFIERS

*Flashguns are great, but these gadgets will help you get more from them*

**T**here's nothing quite like a flashgun for providing instant illumination in a portable package. They're not short on versatility, but add a light modifier and even more creative effects can be achieved.

Modifiers range from simple pocket-sized caps to full-on ring flash substitutes which funnel the flash burst into a ring of light that surrounds your lens. A classic option is a diffuser that softens harsh light into a more flattering glow that's ideal for portraiture or macro photography. Alternatively, if you're after a more focused feel, a snoot or honeycomb attachment will turn your flashgun into a powerful spotlight to isolate a subject or produce a defined hair light. What's more, if you're fed up with boring backdrops, you can slip a coloured gel over an off-camera flashgun, or there are devices that'll go one better and project image slides onto the background instead.

We've compiled a selection of popular modifiers to find out which offers the best light transformation, and which you can manage without... ■

## FIVE THINGS TO LOOK OUT FOR...

*With no shortage of flashgun modifiers on the market, here's how to pick your ideal accessory*

## 01 Versatility

If softening the light is your main objective, you'll get the best results with a dedicated diffusion device.

## 02 Portability

No matter how good the light transformation, if a modifier won't fit in your kit bag, it won't be much use. Go for something that's collapsible for a decent compromise.

## 03 Compatibility

Most modifiers will fix to your flashgun with a simple strap or elastic band, but a few are more complicated, so make sure your preferred modifier will fit your kit.

## 04 Expandability

Some manufacturers have come up with modifier systems based around one universal, quick-release mount. These enable you to build your ideal set-up and minimise excess bulk.

## 05 Boostability

Sticking a diffuser in front of your flashgun will dim the light produced, so ramp up the flash power to compensate, or increase your camera's exposure compensation.

BounceLite  
£100, \$157

▶ [www.bouncelite.com](http://www.bouncelite.com)

It's no secret that one of the easiest ways to get softer illumination from your flashgun is simply to bounce the light off a white ceiling or wall. But you don't always have a white wall to hand, so the BounceLite aims to recreate the same softening effect, no matter where you're shooting.

You pop the box onto your flashgun, and its white interior walls and roof bounce the light through the diffusion panel on the front. The roof can hinge open, enabling you to reflect just the right amount of light onto your subject, and there's even a slot where you can insert a diffusion panel or coloured gels.

The result is improved softness of light that's easy to control yet shows minimal light loss (though a ring-light modifier will produce an even softer effect).



Flip the BounceLite's roof all the way up and you can use it like a standard pop-up bounce card

## NPhoto VERDICT

**PROS:** A compact softbox with plenty of creative possibilities.

**CONS:** Softness can't match that from a ring light adapter.

**WE SAY:** A clever modifier that offers decent performance.

OVERALL

Orbis  
£149, \$199

▶ [www.enlightphotopro.com](http://www.enlightphotopro.com)

The ring flash is a favourite among fashion photographers wanting flattering illumination with minimal shadows. Dedicated ring flashes are pricey, but the Orbis creates the same effect from your flashgun, funneling its flash-burst into a ring of light surrounding your Nikon's lens.

Getting everything into position means your flashgun needs to be hung below your Nikon using an optional bracket, or you can simply hold the Orbis around your lens, but either way, you'll need an off-camera flash cord.

The end result is a pretty unwieldy set-up that'll certainly exercise your arms on long shoots, but the quality of light is worth the workout. The near-shadowless illumination is stunning to behold, though it will sap around two stops of light power.



If you love your Nikon, then perhaps you should put a ring on it?

## NPhoto VERDICT

**PROS:** Superb light softening; works with most flashguns.

**CONS:** Big and bulky to use; needs an off-camera cord.

**WE SAY:** Super-soft lighting, but at a price – and it's a tad clumsy.

OVERALL





## ESSENTIAL KIT

## Hähnel Universal Flash Accessory Kit £50, \$80

▶ [www.hahnel.ie](http://www.hahnel.ie)

Despite being one of the cheaper options on test, you certainly get a lot to play with in this kit. There's a compact softbox to take the edge off shadows, plus a honeycomb grid and a roll-up snoot to concentrate light into a tighter beam. Several gels are included to add a splash of colour, plus you get a small panel to use as a reflector or bounce card. Each accessory fixes to your flashgun using a simple but fairly effective Velcro strap system, and Hähnel rounds the kit off with a useful adjustable bracket to attach your flashgun to a tripod or light stand.

While this kit can help indulge your creative side, its lasting appeal is somewhat limited. We found the softbox isn't particularly effective, you only get seven gel colours and the honeycomb grid attachment is very basic.



You get a lot for your money here, but we're not convinced it's the best choice for enthusiasts

### NPhoto VERDICT

**PROS:** Low price, yet includes several different modifiers.

**CONS:** Feels cheap; softbox and honeycomb aren't very useful.

**WE SAY:** A fair starter kit, but there's better value elsewhere.

**OVERALL** ★★★★★

## Lastolite Strobo Gobo £75, \$92

▶ [www.lastolite.com](http://www.lastolite.com)

Ever wondered how you could recreate the projected silhouette backgrounds cast by theatre spotlights using your flashgun? That's the aim of the Strobo Gobo.

This small box acts a bit like a filter holder, but attaches straight to your flashgun via a bracket. Annoyingly the bracket isn't included, and it'll set you back an additional £25/\$36, but on the upside, it can be used with other modifiers in the Strobo range.

Once you're ready to shoot, simply slide a gobo (a metal stencilled plate) into the holder, fire the flashgun and hey presto: a background silhouette. There's even space in the holder to add coloured gels if you want to.

Lastolite includes two gobo patterns to get you going, with additional foliage or window-design packs available separately.



The Strobo Gobo is incredibly simple in concept, yet really adds depth to a portrait shot

### NPhoto VERDICT

**PROS:** A highly portable way to create instant backdrops.

**CONS:** You need a Strobo Bracket to attach it to a flash.

**WE SAY:** Works a treat, once you've got all the components.

**OVERALL** ★★★★★

## Sto-Fen Omni-Bounce £17, \$11

▶ [www.stofen.com](http://www.stofen.com)

The Omni-Bounce is a translucent cap which outputs light in all directions. With your flashgun's head angled at about 45°, some light is fired forward, but is also bounced off surrounding walls and ceilings to soften the illumination without using a bulkier modifier. It's effective indoors, but not so useful outdoors – plus you might want to avoid leaving it fitted all the time, as there is a significant amount of light loss.

The Sto-Fen range is flashgun-specific, and the plastic cap simply push-fits onto your flashgun in an instant. This is a great time-saver, but it does mean you'll need to purchase a new diffuser for each model when upgrading flashguns. That's no big hardship given the relatively low price, although even this seems a bit much for such a basic piece of plastic.



The Omni-Bounce is a faff-free way to softer flash lighting, though it's far from the softest

### NPhoto VERDICT

**PROS:** Super-compact, yet does help soften a bare flash burst.

**CONS:** Flashgun-specific; less effective than larger diffusers.

**WE SAY:** A handy device, but a bigger modifier can be better.

**OVERALL** ★★★★★

## RoundFlash Ring £66, \$113

▶ [www.inspiredphotogear.com](http://www.inspiredphotogear.com)

When it comes to light-softening, bigger tends to be better. At 45cm wide, the RoundFlash is twice the diameter of the Orbis, but thanks to its fabric construction, it's 30 per cent lighter and folds down smaller than the Orbis.

Set up is a breeze, thanks to the pop-up design. You just snap five magnetic rods into place and strap your flashgun into the back. A simple but effective web of elastic cords secures the RoundFlash to your lens. Avoid using it with wide-angle or short prime optics as vignetting can be noticeable. There isn't much room to access zoom or focus rings either, but the pay-off is light so soft and shadowless that even the Orbis can't quite compete. Just remember to crank up your flashgun to compensate for the three-stop light reduction.



Is it a drum? Is it a wheel? It's big enough to be either, but it's best accompanying your Nikon.

### NPhoto VERDICT

**PROS:** Beats the Orbis in terms of softness, plus it's lighter.

**CONS:** Blocks flash sensors; significant light loss.

**WE SAY:** It's not perfect, but the RoundFlash is still superb.

**OVERALL** ★★★★★

## [MINI TEST]

LIGHTS  
FANTASTIC

*In need of constant illumination for stills or video? Grab a mini LED lamp!*

**F**lashguns are compact, convenient and pack a punch when it comes to output power. However, they're no use whatsoever if you're shooting video. They can also be problematic for close-up stills photography, where they might overpower the subject or cause harsh shadows.

The main alternative is to use a constant lamp. Unfortunately, constant lamps can be large, relatively heavy and cumbersome. They generally also require mains power and can run extremely hot. But it doesn't have to be that way. The six constant lamps featured in this test are small, lightweight affairs. They run on batteries yet deliver useful output power thanks to their arrays of high-efficiency LEDs.

But let's not get carried away. The lamps on test are handy, but they're not miraculous. They're no substitute for a flashgun when you need sufficient power to cover any distance. However, at close range, they're a smart option for portraits, still-lives and video, plus much more besides... ■

## BRIGHT IDEAS

*A variety of features and functions may be on offer, so make sure your prospective purchase ticks the right boxes*

## 01 Size matters

Sizes of the panels on test range from 45mm in diameter for the Manfrotto Lumie Muse to 145x75mm for the Limelite Mosaic Solo.

## 02 Getting attached

Apart from the Riftlabs Kick, all these lamps come with sockets and adaptors for mounting on tripods or a camera's hotshoe. The Kick combines a tripod socket with an iPhone mounting plate.

## 03 Power supply

Most lamps run on standard AA or AAA batteries. The Lumie Muse and Kick have internal rechargeable Li-ion cells.

## 04 Power output

We measured the maximum output of each lamp with an incident light meter at a distance of one metre. Values shown are in EV (Exposure Value) and the aperture required for a correct exposure at a shutter speed of 1/60 sec and ISO100.

## 05 Colour balance

All lamps on test give a daylight balanced colour temperature. This can often be modified with filters. The Riftlabs Kick is the only lamp to enable lighting colour adjustment without filters.

Hama 40 LED Photo/Video Slim Panel  
£69, \$150

▶ [www.hama.com](http://www.hama.com)

This Hama lamp consists of two parts joined together by a flexible 30cm gooseneck. The base includes the battery chamber (three AAA batteries required) and a hotshoe foot with tripod socket, while the small 80x50mm panel houses 40 LEDs, plus a dimmer knob at the rear. In practice the gooseneck feels awkward, and the label that warns against twisting the head or base on the gooseneck doesn't inspire confidence. Clip-on panels are included for diffusion, and tungsten colour balancing.

Hama doesn't quote a beam angle (the wider the beam, the better the peripheral illumination), but in our tests, there was little to choose between the Hama and other lamps in the group, while maximum output power was slightly above average at 8.1EV, corresponding to an aperture of f/2.



The Hama is lightweight at 178g, but the flexible gooseneck makes it a little awkward

## NPhoto VERDICT

**PROS** Lightweight, above-average maximum output.

**CONS** Gooseneck feels quite fragile and flimsy.

**WE SAY** Decent performance, but build quality feels lacking.

## OVERALL

Metz Mecalight LED-480  
£75, \$125

▶ [www.metzflash.co.uk](http://www.metzflash.co.uk)

Similar in design philosophy to the Limelite Mosaic Solo, this Metz lamp is smaller and lighter at 115x70x48mm and 250g, and the active light panel area containing 72 LEDs is downsized to 85x45mm. The supplied diffuser and tungsten filter attach via a neat magnetic system, while – around the back – there's a simple rotary on/off and power-control knob. The Metz runs on four AA batteries and also has a DC input socket for connecting an (optional) external power pack.

Three tripod attachment sockets are built into the case, one at the bottom and one at each side. A tripod/hotshoe adaptor is supplied and there's the option of attaching two additional Metz LED-160 lamps, either directly at each side or via goosenecks. Maximum output is a little lower than some of the competition, at 7.2EV and f/1.6.



Compact, neat and tidy, the Metz can be easily hooked up to additional, smaller LED-160 lamps

## NPhoto VERDICT

**PROS** Easily expandable, optional external power socket.

**CONS** Maximum output power is a little underwhelming.

**WE SAY** It works a treat but it's not the most powerful on test.

## OVERALL





## Limelite Mosaic Solo On-Camera LED

£69, \$130

www.limelite.uk.com

Engineered by Bowens, this is the chunkiest and heaviest lamp in the group, at 171x75x42mm and 450g. It also feels the most robust. Along with the Metz, it has the joint-highest number of 72 individual LEDs, but they're in a larger grid, giving a 145x75mm illumination area. The wide 70-degree beam angle is tailored to widescreen movie capture, and dimming is steplessly variable.

The lamp is powered by eight AA cells and a low-voltage power cable (compatible with an optional AC adaptor). Other useful features consist of a slot-in diffusion panel and tungsten colour-balance filter, plus a tripod/hotshoe mounting bracket complete with mini-ball head, which you can attach to the bottom or side of the lamp. It's top of the class for tested maximum output, at 8.5EV and f/2.2.



This is the largest lamp on test but it is still easily manageable, even when mounted on a hotshoe

### NPhoto VERDICT

**PROS** Upmarket build quality, relatively powerful output.  
**CONS** Not as ultra-compact as some lamps in the group.  
**WE SAY** Excellent performance, build and price (in the UK).

**OVERALL** ★★★★★

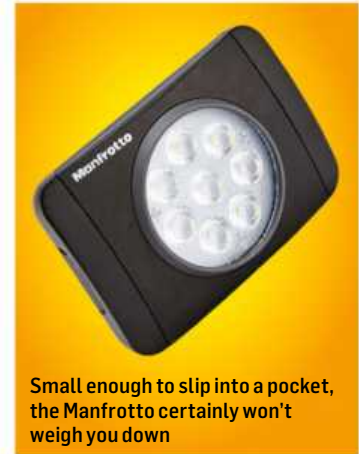
## Manfrotto Lumie Muse

£100, \$120

www.manfrotto.com

Manfrotto has concentrated on miniaturisation for the design of its pocket-sized Lumie Muse. It measures just 86x59x28mm and weighs a mere 175g. The lamp is based on just eight LEDs and the circular LED light aperture has a diameter of just 45mm. A similarly petite tripod/hotshoe adaptor is supplied, along with a diffuser and two warming filters.

The lamp is powered by an internal Li-ion cell, which is charged via a USB socket. The battery should last at least an hour, even when the lamp is used at full power, but a full recharge can take two hours or more, and you can't use the lamp while it's charging. Four different output levels are available via successive presses of the single operating switch, and the maximum output is respectable at 7.7EV and f/1.8.



Small enough to slip into a pocket, the Manfrotto certainly won't weigh you down

### NPhoto VERDICT

**PROS** Very compact and light, good output for eight LEDs.  
**CONS** Can't be used during recharging. Tiny light source.  
**WE SAY** Wonderfully small, but recharging can be a pain.

**OVERALL** ★★★★★

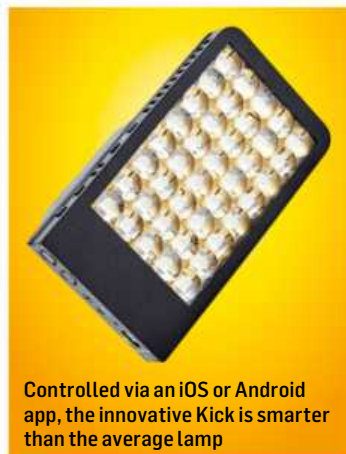
## Riftlabs Kick

£130, \$150

www.riftlabs.com

The Kick uses 48 LEDs in a rectangular array that has a similar surface area to that of the 72-LED Metz, and it has a fixed internal battery like the Manfrotto, that's recharged via a USB socket. However, it's more at home attached to an iPhone than to a camera. Indeed, there's an iPhone bay at the back and a tripod socket at the side, but no hotshoe adaptor.

Basic controls for output power and lighting colour are built-in, but the Wi-Fi-enabled Kick has broader options when controlled from a smartphone using the free iOS or Android app, where a wider range of lighting colours is available, along with special effects for video shooting, such as flickering candle or lightning storm. The maximum power output is the joint-lowest in the group, along with the Rotolight, at 6.8EV and f/1.2.



Controlled via an iOS or Android app, the innovative Kick is smarter than the average lamp

### NPhoto VERDICT

**PROS** Smartphone control, special effects for video.  
**CONS** Can't be used while recharging built-in battery.  
**WE SAY** It's a cool gadget with plenty of features.

**OVERALL** ★★★★★

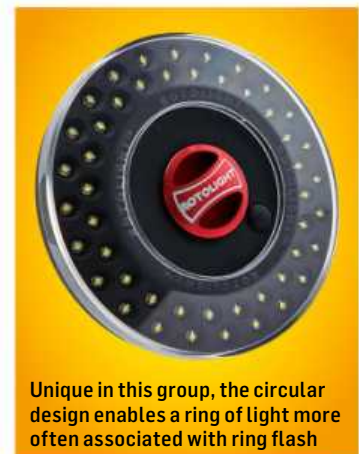
## Rotolight RL-48 LED Creative Colour Kit V2

£100, \$100

www.rotolight.com

This 48-LED lamp looks like the constant lighting equivalent of a conventional ring flash. Just like a ring flash it can produce halo catch-lights in the eyes, but with an internal diameter of just 37mm it definitely won't fit over any of your lenses. The hole in the middle is intended to fit over a shotgun mic for video shooting, or for attaching the supplied hotshoe/tripod-mounting stand.

Unlike all the other lamps on test, this one has no dimmer switch or knob, so it can only be used at maximum power. Instead, the lamp is supplied with a range of neutral density filters, as well as colour correction and diffusion filters, all made by none other than Lee Filters. It's powered by three AA batteries, but in our tests gave a relatively meagre maximum power output of 6.8EV and f/1.2.



Unique in this group, the circular design enables a ring of light more often associated with ring flash

### NPhoto VERDICT

**PROS** Good range of filters, makes interesting catch-lights.  
**CONS** Power isn't adjustable, relatively poor value in the UK.  
**WE SAY** Well made on the whole, and a good buy in the USA.

**OVERALL** ★★★★★

# BUYER'S GUIDE

Not sure which Nikon is for you? Here's a rundown of the range, and in which issue of N-Photo you'll find the review



## NIKON 1 J5, 10-30mm



**A CSC THAT D-SLR USERS WILL LOVE**, the J5 has the highest resolution of any Nikon 1 camera to date (20.8Mp) and a decent sensitivity range. The top dial now also gives access to semi-automatic and manual exposure modes, plus you can shoot in RAW, which is real bonus.



TESTED IN ISSUE 47 PRICE: £300/\$500

Sensor	20.8Mp, CX (5232x3488)
Processor	EXPEED 5A
Viewfinder	N/A
ISO	200-12800
AF	171-area contrast (105-area phase)
LCD	3-inch touch-sensitive tilting
Max burst	60fps
Memory card	microSD/HC/XC

## NIKON 1 S2, 11-27.5mm



**SMALL IN SIZE BUT BIG ON QUALITY**, the svelte Nikon 1 S2 is responsive and speedy. With a 14.2Mp image sensor, and the omission of built-in Wi-Fi or a touchscreen, it's more basic than the J5, but still a highly capable camera that you can slip into your bag as a lightweight backup.

PRICE: £270/\$350

Sensor	14.2Mp, CX (4592x3072)
Processor	EXPEED 4A
Viewfinder	N/A
ISO	200-12800
AF	135-area contrast (73-area phase)
LCD	3-inch
Max burst	20fps (60fps fixed AF)
Memory card	microSD/HC/XC

## NIKON 1 AW1, 11-27.5mm



**VERY MUCH THE ACTION ADVENTURER**, the AW1 is shockproof, waterproof to a depth of 15 metres, and freeze-proof down to -10°C. To keep pace with a truly active lifestyle, it also has a built-in compass, altimeter, depth gauge and GPS.



TESTED IN ISSUE 46 PRICE: £550/\$700

Sensor	Sensor 14.2Mp, CX (4608x3072)
Processor	EXPEED 3A
Viewfinder	N/A
ISO	160-6400
AF	135-area contrast (73-area phase)
LCD	3-inch
Max burst	15fps (60fps fixed AF)
Memory card	SD/HC/XC

## NIKON 1 V2, 10-30mm



**FOR COMFORT AND FAMILIARITY**, the conventional layout of the V2 includes a sculpted finger grip, electronic viewfinder and shooting mode dial. It's been largely superseded by the V3 (below), so look out for it at bargain prices.



TESTED IN ISSUE 19 PRICE: £370/\$900

Sensor	14.2Mp, CX (4608x3072)
Processor	EXPEED 3A
Viewfinder	1440k
ISO	160-6400
AF	135-area contrast (73-area phase)
LCD	3-inch
Max burst	15fps (60fps fixed AF)
Memory card	SD/HC/XC

## NIKON 1 V3, 10-30mm, EVF AND GRIP



**THE FLAGSHIP NIKON 1 CAMERA** adds a vari-angle touchscreen to the comfortable ergonomics of the preceding V2, along with key upgrades to the image sensor, processor and autofocus system, plus built-in Wi-Fi. The electronic viewfinder is optional.



TESTED IN ISSUE 46 PRICE: £750/\$1100

Sensor	18.4Mp, CX (5232x3488)
Processor	EXPEED 4A
Viewfinder	Electronic
ISO	160-12800
AF	171-area contrast (105-area phase)
LCD	3-inch touch, vari-angle
Max burst	20fps (60fps fixed AF)
Memory card	SD/HC/XC

## NIKON D3200



**AN INSTANT FAVOURITE WITH BEGINNERS** when launched back in 2012, the D3200 eases you into creative photography with a built-in Guide mode that serves up interactive tutorials. There's impressive picture quality to match, thanks to its 24.2Mp image sensor and EXPEED 3 processor.



TESTED IN ISSUE 09 PRICE: £230/\$330

Sensor	24.2Mp, DX (6016x4000)
Processor	EXPEED 3
Viewfinder	Pentamirror, 0.8x, 95%
ISO	100-6400 (12800 expanded)
AF	11-point (1 cross-type)
LCD	3-inch
Max burst (buffer)	4fps (18 RAW/80 JPEG)
Memory card	SD/HC/XC



## NIKON D3300



**CONTINUES THE D3200'S BEGINNER-FRIENDLY TRADITION** of an interactive Guide shooting mode, and boosts performance with a later-generation EXPEED 4 processor, faster continuous shooting and greater low-light potential. There's also a new 'easy panorama' mode.



TESTED IN ISSUE 30 PRICE: £300/\$400

Sensor	24.2Mp, DX (6000x4000)
Processor	EXPEED 4
Viewfinder	Pentamirror, 0.85x, 95%
ISO	100-12800 (25600 expanded)
AF	11-point (1 cross-type)
LCD	11-point (1 cross-type)
Max burst (buffer)	5fps (11 RAW/100 JPEG)
Memory card	SD/HC/XC

## NIKON D5200



**THE D5200 HAS BECOME A VERY AFFORDABLE INTERMEDIATE-LEVEL CAMERA**, now that the D5300 and D5500 have hit the market. Originally launched in early 2013, its specifications still look appealing, and the vari-angle LCD makes for easy shooting from tricky angles.



TESTED IN ISSUE 17 PRICE: £330/\$500

Sensor	24.1Mp, DX (6000x4000)
Processor	EXPEED 3
Viewfinder	Pentamirror, 0.78x, 95%
ISO	100-6400 (25600 expanded)
AF	39-point (9 cross-type)
LCD	3-inch vari-angle
Max burst (buffer)	5fps (8 RAW/35 JPEG)
Memory card	SD/HC/XC

## NIKON D5300



**A SIGNIFICANT UPGRADE OVER THE D5200**, this camera features a newer generation processor, plus built-in Wi-Fi and GPS, wrapped up in a carbon-fibre-reinforced body shell. As with the D3300, the optical low-pass filter is omitted to maximise the potential for image sharpness.



TESTED IN ISSUE 28 PRICE: £450/\$650

Sensor	24.2Mp, DX (6000x4000)
Processor	EXPEED 4
Viewfinder	Pentamirror, 0.82x, 95%
ISO	100-12800 (25600 expanded)
AF	39-point (9 cross-type)
LCD	3.2-inch vari-angle
Max burst (buffer)	5fps (13 RAW/100 JPEG)
Memory card	SD/HC/XC

## NIKON D5500



**THE SAME PIXEL COUNT AND PROCESSOR AS THE PRECEDING D5300**, built into the same style of monocoque (one-piece) body shell. The most notable upgrade in the newer D5500 is that its vari-angle LCD is a touchscreen. However, it loses the D5300's built-in GPS.



TESTED IN ISSUE 51 PRICE: £540/\$750

Sensor	24.2Mp, DX (6000x4000)
Processor	EXPEED 4
Viewfinder	Pentamirror, 0.82x, 95%
ISO	100-12800 (25600 expanded)
AF	39-point (9 cross-type)
LCD	3.2-inch vari-angle touchscreen
Max burst (buffer)	5fps (13 RAW/100 JPEG)
Memory card	SD/HC/XC

## NIKON D7000



**OUTSTRIPPING THE NEAR-PRO-LEVEL D300s WHEN IT WAS LAUNCHED IN 2010**, it nevertheless now lags behind the newer D7100 and D7200, but still offers advanced controls and great handling to suit creative photographers, and at a knockdown price.



TESTED IN ISSUE 31 PRICE: £580/\$535

Sensor	16.2Mp, DX (4928x3264)
Processor	EXPEED 2
Viewfinder	Pentaprism, 0.94x, 100%
ISO	100-6400 (25600 expanded)
AF	39-point (9 cross-type)
LCD	3-inch
Max burst (buffer)	6fps (10-15 RAW/31 JPEG)
Memory card	2x SD/HC/XC

## NIKON D7100



**THE D7100 GETS A NOTABLE HIKE IN PIXEL COUNT** compared with the preceding D7000, along with the removal of the optical low-pass filter to maximise sharpness. Its autofocus system gets a boost too, and a 1.3x crop facility increases the maximum drive rate to 7fps.



TESTED IN ISSUE 19 PRICE: £710/\$800

Sensor	24.1Mp, DX (6000x4000)
Processor	EXPEED 3
Viewfinder	Pentaprism, 0.94x, 100%
ISO	100-6400 (25600 expanded)
AF	51-point (15 cross-type)
LCD	3.2-inch
Max burst (buffer)	6fps, 7fps crop (6-9 RAW/33 JPEG)
Memory card	2x SD/HC/XC

## NIKON D7200



**BUILDING ON THE D7100'S SPECIFICATIONS**, Nikon's latest and most advanced DX-format camera boasts better low-light autofocus, a bigger memory buffer, an updated processor, built-in Wi-Fi and NFC, plus new trick modes for light-trail photography and time-lapse movies.



TESTED IN ISSUE 51 PRICE: £850/\$1100

Sensor	24.2Mp, DX (6000x4000)
Processor	EXPEED 4
Viewfinder	Pentaprism, 0.94x, 100%
ISO	100-25600 (102400 expanded, mono only)
AF	51-point (15 cross-type)
LCD	3.2-inch
Max burst (buffer)	6fps, 7fps crop (18-27 RAW/100 JPEG)
Memory card	2x SD/HC/XC

## NIKON D300s



**THE VETERAN D300s WAS LAUNCHED ALL THE WAY BACK IN 2009**, but is still available if you look hard enough. Image quality is appealing, the maximum drive rate is fast, and its entire body has a magnesium alloy build that's particularly durable, though its specifications look dated.



## NIKON D610



**FULL-FRAME PHOTOGRAPHY STARTS HERE**, with the most affordable of Nikon's FX cameras. It's no slouch, with a 6fps maximum drive rate and a quiet (but slower) continuous drive option. It also features a weather-sealed body and, compared with the D600, a revised shutter unit.



## NIKON D750



**THE D750 IS EASILY MANAGEABLE FOR A PROFESSIONAL FULL-FRAME BODY.** A recent addition to the line-up, it includes a tilting LCD screen and built-in Wi-Fi. The pixel count strikes a happy medium between the 16.2Mp Df/D4s and the 36.3Mp D810.



## NIKON Df



**ICONIC DESIGN MEETS HIGH-TECH EXCELLENCE IN THIS RETRO BEAUTY.** The Df is amazingly compact for a full-frame body but direct-access dials and buttons ensure that shooting controls are always within easy reach. The lack of a video shooting capability is a surprise omission.



## NIKON D800e



**A SPECIAL EDITION OF THE ORIGINAL D800**, this one has a modified optical low-pass filter that omits an anti-alias feature. It's therefore better able to capture extraordinary levels of fine detail, maximising the potential of its ultra-high-resolution image sensor.



## NIKON D810



**THE KING OF THE RESOLUTION STAKES**, the D810 boasts 36.3 million pixels and, unlike the older D800e, has no optical low-pass filter. It has a later-generation processor and an extended sensitivity range. A specialised D810A edition for astrophotography is available (£2900, \$3795).



## NIKON D4s



**NIKON'S SPEEDY FLAGSHIP PROFESSIONAL D-SLR DELIVERS 11FPS SHOOTING**, complete with continuous autofocus and metering. Handling is sublime with duplicated controls for portrait-orientation (upright) shooting, and image quality is immaculate, even at ultra-high ISO settings.



## TESTED IN ISSUE 31 PRICE: £880/\$1200

Sensor	12.3Mp, FX (4288x2848)
Processor	EXPEED
Viewfinder	Pentaprism, 0.94x, 100%
ISO	200-3200 (100-6400 expanded)
AF	51-point (15 cross-type)
LCD	3-inch
Max burst (buffer)	7fps, 8fps with grip (18-45 RAW/44 JPEG)
Memory card	1x CF, 1x SD/HC/XC

## TESTED IN ISSUE 51 PRICE: £1185/\$1500

Sensor	24.3Mp, FX (6016x4016)
Processor	EXPEED 3
Viewfinder	Pentaprism, 0.7x, 100%
ISO	100-6400 (50-25600 expanded)
AF	39-point (9 cross-type)
LCD	3.2-inch
Max burst (buffer)	6fps (14-26 RAW/51 JPEG)
Memory card	2x SD/HC/XC

## TESTED IN ISSUE 51 PRICE: £1500/\$2000

Sensor	24.3Mp, FX (6016x4016)
Processor	EXPEED 4
Viewfinder	Pentaprism, 0.7x, 100%
ISO	100-12800 (50-51200 expanded)
AF	51-point (15 cross-type)
LCD	3.2-inch tilt
Max burst (buffer)	6.5fps (15-33 RAW/87 JPEG)
Memory card	2x SD/HC/XC

## TESTED IN ISSUE 29 PRICE: £1900/\$2745

Sensor	16.2Mp, FX (4928x3280)
Processor	EXPEED 3
Viewfinder	Pentaprism, 0.7x, 100%
ISO	100-12800 (50-204800 expanded)
AF	39-point (9 cross-type)
LCD	3.2-inch
Max burst (buffer)	5.5fps (25-47 RAW/100 JPEG)
Memory card	SD/HC/XC

## TESTED IN ISSUE 11 PRICE: £2250/\$2900

Sensor	36.3Mp, FX (7360x4912)
Processor	EXPEED 3
Viewfinder	Pentaprism, 0.7x, 100%
ISO	100-6400 (50-25600 expanded)
AF	51-point (15 cross-type)
LCD	3.2-inch
Max burst (buffer)	4fps, 5fps DX crop (16-25 RAW/56 JPEG)
Memory card	1x CF, 1x SD/HC/XC

## TESTED IN ISSUE 51 PRICE: £2350/\$3000

Sensor	36.3Mp, FX (7360x4912)
Processor	EXPEED 4
Viewfinder	Pentaprism, 0.7x, 100%
ISO	64-12800 (32-51200 expanded)
AF	51-point (15 cross-type)
LCD	3.2-inch
Max burst (buffer)	5fps, 7fps DX crop (18-58 RAW/100 JPEG)
Memory card	1x CF, 1x SD/HC/XC

## TESTED IN ISSUE 32 PRICE: £4450/\$6000

Sensor	16.2Mp, FX (4928x3280)
Processor	EXPEED 4
Viewfinder	Pentaprism, 0.7x, 100%
ISO	100-25600 (50-409600 expanded)
AF	51-point (15 cross-type)
LCD	3.2-inch
Max burst (buffer)	11fps (36-176 RAW/200 JPEG)
Memory card	1x CF, 1x XQD



# BUYER'S GUIDE

Vital statistics – find the right lens at the right price point, plus ratings from N-Photo magazine and the issue reviewed



KEY: ● GREAT VALUE ● BEST ON TEST AWARD

## WIDE-ANGLE ZOOMS

	Price	DX/FX	Max zoom	Stabilizer	Autofocus	Max aperture	Weight	Min focus	Magnification	Filter size	Aperture blades	Issue reviewed	Rating	Awards
<b>WIDE-ANGLE ZOOMS</b>														
<b>Nikon</b> AF-S DX 10-24mm f/3.5-4.5G ED	£640/\$810	DX	2.4x	No	Ultrasonic	f/3.5-4.5	460g	0.22m	0.2x	77mm	7	47	★★★★	
<b>Nikon</b> AF-S DX 12-24mm f/4G IF-ED	£840/\$1100	DX	2.0x	No	Ultrasonic	f/4	465g	0.3m	0.12x	77mm	7	32	★★★★	
<b>Nikon</b> AF-S 14-24mm f/2.8G ED	£1320/\$2000	FX	1.7x	No	Ultrasonic	f/2.8	970g	0.28m	0.15x	None	9	47	★★★★★	●
<b>Nikon</b> AF-S 16-35mm f/4G ED VR	£830/\$1260	FX	2.2x	Yes	Ultrasonic	f/4	685g	0.28m	0.25x	77mm	9	47	★★★★★	
<b>Nikon</b> AF-S 18-35mm f/3.5-4.5G ED	£520/\$750	FX	1.9x	No	Ultrasonic	f/3.5-4.5	385g	0.28m	0.2x	77mm	7	47	★★★★★	●
<b>Nikon</b> AF-S 17-35mm f/2.8D IF-ED	£1500/\$1750	FX	2.1x	No	Ultrasonic	f/2.8	745g	0.28m	0.22x	77mm	9			
<b>Sigma</b> 8-16mm f/4.5-5.6 DC HSM	£520/\$700	DX	2.0x	No	Ultrasonic	f/4.5-5.6	555g	0.24m	0.13x	None	7	47	★★★★★	
<b>Sigma</b> 10-20mm f/3.5 EX DC HSM	£385/\$650	DX	2.0x	No	Ultrasonic	f/3.5	520g	0.24m	0.15x	82mm	7	47	★★★★★	●
<b>Sigma</b> 10-20mm f/4-5.6 EX DC HSM	£350/\$400	DX	2.0x	No	Ultrasonic	f/4-5.6	465g	0.24m	0.15x	77mm	6	32	★★★★★	●
<b>Sigma</b> 12-24mm f/4.5-5.6 II DG HSM	£600/\$950	FX	2.0x	No	Ultrasonic	f/4.5-5.6	670g	0.28m	0.16x	None	6	47	★★★★★	●
<b>Tamron</b> SP AF 10-24mm f/3.5-4.5 Di II LD	£360/\$500	DX	2.4x	No	Electric	f/3.5-4.5	406g	0.24m	0.2x	77mm	7	47	★★★★	
<b>Tamron</b> SP 15-30mm f/2.8 Di VC USD	£950/\$1200	FX	2.0x	Yes	Ultrasonic	f/2.8	1100g	0.28m	0.2x	None	9			
<b>Tokina</b> 10-17mm f/3.5-4.5 AT-X DX Fisheye	£530/\$530	DX	1.7x	No	Electric	f/3.5-4.5	350g	0.14m	0.39x	None	6			
<b>Tokina</b> 11-16mm f/2.8 AT-X PRO DX II	£600/\$480	DX	1.5x	No	Electric	f/2.8	550g	0.3m	0.09x	77mm	9	32	★★★★★	
<b>Tokina</b> 12-28mm f/4 AT-X Pro DX	£530/\$450	DX	2.3x	No	Electric	f/4	530g	0.25m	0.2x	77mm	9	32	★★★★★	
<b>Tokina</b> 16-28mm f/2.8 AT-X PRO FX	£700/\$630	FX	1.8x	No	Electric	f/2.8	950g	0.28m	0.19x	None	9	33	★★★★★	
<b>Tokina</b> 17-35mm f/4 AT-X PRO FX	£550/\$450	FX	2.1x	No	Electric	f/4	600g	0.28m	0.21x	82mm	9			

## STANDARD ZOOMS

<b>STANDARD ZOOMS</b>														
<b>Nikon</b> AF-S DX 16-85mm f/3.5-5.6G ED VR	£440/\$600	DX	5.3x	Yes	Ultrasonic	f/3.5-5.6	485g	0.38m	0.22x	67mm	7	26	★★★★★	●
<b>Nikon</b> AF-S DX 17-55mm f/2.8G IF-ED	£1050/\$1500	DX	3.2x	No	Ultrasonic	f/2.8	755g	0.36m	0.2x	77mm	9	26	★★★★★	
<b>Nikon</b> AF-S DX 18-55mm f/3.5-5.6G ED II	£120/\$120	DX	3.1x	No	Ultrasonic	f/3.5-5.6	195g	0.28m	0.31x	52mm	7			
<b>Nikon</b> AF-S DX 18-55mm f/3.5-5.6G VR	£145/\$200	DX	3.1x	Yes	Ultrasonic	f/3.5-5.6	265g	0.28m	0.31x	52mm	7			
<b>Nikon</b> AF-S DX 18-55mm f/3.5-5.6G VR II	£230/\$250	DX	3.1x	Yes	Ultrasonic	f/3.5-5.6	195g	0.28m	0.31x	52mm	7			
<b>Nikon</b> AF-S DX 18-105mm f/3.5-5.6G ED VR	£205/\$400	DX	5.8x	Yes	Ultrasonic	f/3.5-5.6	420g	0.45m	0.2x	67mm	7			
<b>Nikon</b> AF-S 24-70mm f/2.8G ED	£1200/\$1900	FX	2.9x	No	Ultrasonic	f/2.8	900g	0.38m	0.27x	77mm	9	26	★★★★★	
<b>Nikon</b> AF-S 24-85mm f/3.5-4.5G ED VR	£400/\$597	FX	3.5x	Yes	Ultrasonic	f/3.5-4.5	465g	0.38m	0.22x	72mm	7	21	★★★★	
<b>Nikon</b> AF-S 24-120mm f/4G ED VR	£750/\$1300	FX	5.0x	Yes	Ultrasonic	f/4	710g	0.45x	0.24x	77mm	9	21	★★★★★	●
<b>Sigma</b> 17-50mm f/2.8 EX DC OS HSM	£300/\$520	DX	2.9x	Yes	Ultrasonic	f/2.8	565g	0.28m	0.2x	77mm	7	26	★★★★★	●
<b>Sigma</b> 17-70mm f/2.8-4 DC Macro OS HSM   C	£330/\$500	DX	4.1x	Yes	Ultrasonic	f/2.8-4	465g	0.22m	0.36x	72mm	7	26	★★★★★	
<b>Sigma</b> 18-35mm f/1.8 DC HSM   A	£640/\$800	DX	1.9x	No	Ultrasonic	f/1.8	810g	0.28m	0.23x	72mm	9			
<b>Sigma</b> 24-70mm f/2.8 IF EX DG HSM	£595/\$900	FX	2.9x	No	Ultrasonic	f/2.8	790g	0.38m	0.19x	82mm	9	26	★★★★	
<b>Sigma</b> 24-105mm f/4 DG OS HSM   A	£680/\$900	FX	4.4x	Yes	Ultrasonic	f/4	885g	0.45m	0.22x	82mm	9			
<b>Tamron</b> SP AF 17-50mm f/2.8 XR Di II VC	£350/\$650	DX	2.9x	Yes	Electric	f/2.8	570g	0.29m	0.21x	72mm	7	26	★★★★	
<b>Tamron</b> SP AF 24-70mm f/2.8 Di VC USD	£700/\$1300	FX	2.9x	Yes	Ultrasonic	f/2.8	825g	0.38m	0.2x	82mm	9	26	★★★★★	●
<b>Tamron</b> SP AF 28-75mm f/2.8 XR Di	£360/\$500	FX	2.7x	No	Electric	f/2.8	510g	0.33m	0.26x	67mm	7	5	★★★★	

## TELEPHOTO ZOOMS

<b>TELEPHOTO ZOOMS</b>														
<b>Nikon</b> AF-S DX 55-200mm f/4-5.6G ED	£195/\$180	DX	3.6x	No	Ultrasonic	f/4-5.6	255g	0.95m	0.23x	52mm	9	35	★★★★	
<b>Nikon</b> AF-S DX 55-200mm f/4-5.6G IF-ED VR	£230/\$250	DX	3.6x	Yes	Ultrasonic	f/4-5.6	335g	1.1m	0.23x	52mm	7	35	★★★★	
<b>Nikon</b> AF-S DX 55-200mm f/4-5.6G ED VR II	£280/\$350	DX	3.6x	Yes	Ultrasonic	f/4-5.6	300g	1.1m	0.23x	52mm	7			
<b>Nikon</b> AF-S DX 55-300mm f/4.5-5.6G ED VR	£270/\$400	DX	5.5x	Yes	Ultrasonic	f/4.5-5.6	530g	1.4m	0.22x	58mm	9	35	★★★★★	
<b>Nikon</b> AF-S 70-200mm f/2.8G ED VR II	£1580/\$2400	FX	2.9x	Yes	Ultrasonic	f/2.8	1540g	1.4m	0.12x	77mm	9	29	★★★★★	●
<b>Nikon</b> AF-S 70-200mm f/4G ED VR	£940/\$1400	FX	2.9x	Yes	Ultrasonic	f/4	850g	1.0m	0.27x	67mm	9	29	★★★★★	
<b>Nikon</b> AF-S 70-300mm f/4.5-5.6G IF-ED VR	£420/\$590	FX	4.3x	Yes	Ultrasonic	f/4.5-5.6	745g	1.5m	0.25x	67mm	9	45	★★★★★	●
<b>Nikon</b> AF 80-400mm f/4.5-5.6D ED VR	£940/\$1850	FX	5.0x	Yes	Body-driven	f/4.5-5.6	1360g	2.3m	0.21x	77mm	9	8	★★★★	
<b>Nikon</b> AF-S 80-400mm f/4.5-5.6G ED VR	£1900/\$2700	FX	5.0x	Yes	Ultrasonic	f/4.5-5.6	1570g	1.5m	0.2x	77mm	9	45	★★★★★	
<b>Nikon</b> AF-S 200-400mm f/4G ED VR II	£4900/\$7000	FX	2.0x	Yes	Ultrasonic	f/4	3360g	1.95m	0.27x	52mm	9	45	★★★★★	●
<b>Samyang</b> 650-1300mm MC IF f/8-16	£265/\$240	FX	2.0x	No	None	f/8-16	2000g	5.0m	0.2x	95mm	0			
<b>Sigma</b> 50-500mm f/4.5-6.3 DG OS HSM	£1000/\$1500	FX	10.0x	Yes	Ultrasonic	f/4.5-6.3	1970g	0.5-1.8m	0.32x	95mm	9	45	★★★★★	
<b>Sigma</b> 70-200mm f/2.8 EX DG OS HSM	£750/\$1200	FX	2.9x	Yes	Ultrasonic	f/2.8	1430g	1.4m	0.13x	77mm	9	29	★★★★★	●
<b>Sigma</b> 70-300mm f/4-5.6 DG Macro	£130/\$150	FX	4.3x	No	Electric	f/4-5.6	545g	0.95m	0.5x	58mm	9	35	★★★★	

# ESSENTIAL KIT

KEY: ● GREAT VALUE ● BEST ON TEST AWARD

	Price	DX/FX	Max zoom	Stabilizer	Autofocus	Max aperture	Weight	Min focus	Magnification	Filter size	Aperture blades	Issue reviewed	Rating	Awards
<b>TELEPHOTO ZOOMS</b>														
<b>Sigma</b> APO 70-300mm f/4-5.6 DG Macro	£150/\$180	FX	4.3x	No	Electric	f/4-5.6	550g	0.95m	0.5x	58mm	9	35	★★★★	
<b>Sigma</b> 120-300mm f/2.8 DG OS HSM   S	£2700/\$3600	FX	2.5x	Yes	Ultrasonic	f/2.8	3390g	1.5-2.5m	0.12x	105mm	9	45	★★★★	
<b>Sigma</b> APO 150-500mm f/5-6.3 DG OS HSM	£700/\$870	FX	3.3x	Yes	Ultrasonic	f/5-6.3	1780g	2.2m	0.19x	86mm	9	45	★★★★	
<b>Sigma</b> 150-600mm f/5-6.3 DG OS HSM   S	£1500/\$2000	FX	4.0x	Yes	Ultrasonic	f/5-6.3	2860g	2.6m	0.2x	105mm	9	45	★★★★	●
<b>Sigma</b> 200-500mm f/2.8 EX DG	£12,700/\$26,000	FX	2.5x	No	Ultrasonic	f/2.8	15,700g	20-50m	0.13x	72mm	9			
<b>Sigma</b> 300-800mm f/5.6 EX DG HSM	£5500/\$8000	FX	2.7x	No	Ultrasonic	f/5.6	5880g	6.0m	0.14x	46mm	9	45	★★★	
<b>Tamron</b> SP AF 70-200mm f/2.8 Di LD (IF) Macro	£500/\$770	FX	2.9x	No	Electric	f/2.8	1320g	0.95m	0.32x	77mm	9			
<b>Tamron</b> SP AF 70-200mm f/2.8 Di VC USD	£1000/\$1500	FX	2.9x	Yes	Ultrasonic	f/2.8	1470g	1.3m	0.13x	77mm	9	29	★★★★	●
<b>Tamron</b> AF 70-300mm f/4-5.6 Di LD Macro	£130/\$150	FX	4.3x	No	Electric	f/4-5.6	458g	0.95m	0.5x	62mm	9	35	★★★	
<b>Tamron</b> SP AF 70-300mm f/4-5.6 Di VC USD	£290/\$450	FX	4.3x	Yes	Ultrasonic	f/4-5.6	765g	1.5m	0.25x	62mm	9	35	★★★★	●
<b>Tamron</b> SP 150-600mm f/5-6.3 Di VC USD	£870/\$1070	FX	4.0x	Yes	Ultrasonic	f/5-6.3	1951g	2.7m	0.2x	95mm	9	45	★★★★	●
<b>SUPERZOOMS</b>														
<b>Nikon</b> AF-S DX 18-140mm f/3.5-5.6G ED VR	£460/\$500	DX	7.8x	Yes	Ultrasonic	f/3.5-5.6	490g	0.45m	0.23x	67mm	7	27	★★★	
<b>Nikon</b> AF-S DX 18-200mm f/3.5-5.6G ED VR II	£585/\$500	DX	11.1x	Yes	Ultrasonic	f/3.5-5.6	565g	0.5m	0.22x	72mm	7	39	★★★★	
<b>Nikon</b> AF-S DX 18-300mm f/3.5-5.6G ED VR	£670/\$900	DX	16.7x	Yes	Ultrasonic	f/3.5-5.6	830g	0.45m	0.31x	77mm	9	39	★★★	
<b>Nikon</b> AF-S DX 18-300mm f/3.5-6.3G ED VR	£599/\$897	DX	16.7x	Yes	Ultrasonic	f/3.5-6.3	550g	0.48m	0.32x	67mm	7	39	★★★	
<b>Nikon</b> AF-S 28-300mm f/3.5-5.6G ED VR	£660/\$1050	FX	10.7x	Yes	Ultrasonic	f/3.5-5.6	800g	0.5m	0.32x	77mm	9	21	★★★★	
<b>Sigma</b> 18-200mm f/3.5-6.3 DC Macro OS HSM   C	£270/\$400	DX	11.1x	Yes	Ultrasonic	f/3.5-6.3	430g	0.39m	0.33x	62mm	7	39	★★★★	●
<b>Sigma</b> 18-250mm f/3.5-6.3 DC Macro OS HSM	£295/\$350	DX	13.9x	Yes	Ultrasonic	f/3.5-6.3	470g	0.35m	0.34x	62mm	7	39	★★★★	●
<b>Sigma</b> 18-300mm f/3.5-6.3 DC Macro OS HSM   C	£400/\$580	DX	16.7x	Yes	Ultrasonic	f/3.5-6.3	585g	0.39m	0.33x	72mm	7			
<b>Tamron</b> 16-300mm f/3.5-6.3 Di II VC PZD Macro	£450/\$630	DX	18.8x	Yes	Ultrasonic	f/3.5-6.3	540g	0.39m	0.34x	67mm	7	39	★★★★	●
<b>Tamron</b> AF 18-200mm f/3.5-6.3 XR Di II LD Macro	£135/\$200	DX	11.1x	No	Electric	f/3.5-6.3	405g	0.45m	0.27x	62mm	7	39	★★★★	
<b>Tamron</b> AF 18-270mm f/3.5-6.3 Di II VC PZD	£330/\$450	DX	15.0x	Yes	Ultrasonic	f/3.5-6.3	450g	0.49m	0.26x	62mm	7	39	★★★	
<b>Tamron</b> 28-300mm f/3.5-6.3 Di VC PZD	£570/\$850	FX	10.7x	Yes	Ultrasonic	f/3.5-6.3	540g	0.49m	0.29x	67mm	7	16	★★★	
<b>Tamron</b> AF 28-300mm f/3.5-6.3 XR Di LD	£330/\$400	FX	10.7x	No	Body-driven	f/3.5-6.3	435g	0.49m	0.34x	62mm	9			
<b>WIDE-ANGLE PRIMES</b>														
<b>Nikon</b> AF DX 10.5mm f/2.8G ED Diagonal Fisheye	£550/\$689	DX	None	No	Body-driven	f/2.8	305g	0.14m	0.2x	None	7	12	★★★★	●
<b>Nikon</b> AF 14mm f/2.8D ED	£1240/\$1890	FX	None	No	Body-driven	f/2.8	670g	0.2m	0.15x	None	7			
<b>Nikon</b> AF 16mm f/2.8D Diagonal Fisheye	£625/\$1000	FX	None	No	Body-driven	f/2.8	290g	0.25m	0.1x	None	7	12	★★★★	
<b>Nikon</b> AF-S 20mm f/1.8G ED	£680/\$800	FX	None	No	Ultrasonic	f/1.8	355g	0.2m	0.23x	77mm	7			
<b>Nikon</b> AF 20mm f/2.8D	£465/\$625	FX	None	No	Body-driven	f/2.8	270g	0.25m	0.12x	62mm	7			
<b>Nikon</b> AF-S 24mm f/1.4G ED	£1465/\$2200	FX	None	No	Ultrasonic	f/1.4	620g	0.25m	0.18x	77mm	9	33	★★★★	
<b>Nikon</b> AF 24mm f/2.8D	£370/\$395	FX	None	No	None	f/2.8	270g	0.3m	0.11x	52mm	7			
<b>Nikon</b> PC-E 24mm f/3.5D ED (tilt & shift)	£1465/\$2200	FX	None	No	None	f/3.5	730g	0.21m	0.37x	77mm	9	25	★★★★	●
<b>Nikon</b> AF-S 28mm f/1.8G	£495/\$697	FX	None	No	Ultrasonic	f/1.8	330g	0.25m	0.22x	67mm	7	25	★★★★	
<b>Nikon</b> AF 28mm f/2.8D	£245/\$290	FX	None	No	Body-driven	f/2.8	205g	0.25m	0.18x	72mm	7			
<b>Nikon</b> AF-S 35mm f/1.4G	£1295/\$1500	FX	None	No	Ultrasonic	f/1.4	600g	0.3m	0.2x	67mm	9	25	★★★★	
<b>Nikon</b> AF-S 35mm f/1.8G ED	£430/\$597	FX	None	No	Ultrasonic	f/1.8	305g	0.25m	0.24x	58mm	7			
<b>Nikon</b> AF 35mm f/2D	£255/\$390	FX	None	No	None	f/2	205g	0.25m	0.24x	52mm	7			
<b>Samyang</b> 8mm f/3.5 IF MC CS II DH Circular Fisheye	£285/\$260	FX	None	No	None	f/3.5	435g	0.3m	N/S	None	6	12	★★★★	
<b>Samyang</b> 10mm f/2.8 ED AS NCS CS	£410/\$385	DX	None	No	None	f/2.8	600g	0.25m	N/S	None	6			
<b>Samyang</b> 12mm f/2.8 ED AS NCS Diagonal Fisheye	£480/\$350	FX	None	No	None	f/2.8	530g	0.2m	N/S	None	7			
<b>Samyang</b> 14 mm f/2.8 IF ED UMC	£320/\$320	FX	None	No	None	f/2.8	560g	0.28m	N/S	None	6	33	★★★★	●
<b>Samyang</b> 16mm f/2 ED AS UMC CS	£435/\$360	DX	None	No	None	f/2	590g	0.2m	N/S	77mm	8			
<b>Samyang</b> 24mm f/1.4 ED AS UMC	£560/\$530	FX	None	No	None	f/1.4	680g	0.25m	N/S	77mm	8			
<b>Samyang</b> T-S 24mm f/3.5 ED AS UMC (tilt & shift)	£900/\$700	FX	None	No	None	f/3.5	680g	0.2m	N/S	82mm	8	25	★★★★	●
<b>Samyang</b> 35mm f/1.4 AS UMC AE	£440/\$450	FX	None	No	None	f/1.4	660g	0.3m	0.2x	77mm	8	40	★★★★	
<b>Sigma</b> 4.5mm f/2.8 EX DC HSM Circular Fisheye	£600/\$800	DX	None	No	Ultrasonic	f/2.8	470g	0.14m	0.17x	None	6	12	★★★★	
<b>Sigma</b> 8mm f/3.5 EX DG Circular Fisheye	£620/\$900	FX	None	No	Electric	f/3.5	400g	0.14m	0.22x	None	6	12	★★★★	
<b>Sigma</b> 10mm f/2.8 EX DC HSM Diagonal Fisheye	£480/\$600	DX	None	No	Ultrasonic	f/2.8	475g	0.14m	0.11x	None	7	12	★★★	
<b>Sigma</b> 15mm f/2.8 EX DG Diagonal Fisheye	£475/\$600	FX	None	No	Electric	f/2.8	370g	0.15m	0.26x	None	7	12	★★★★	
<b>Sigma</b> 28mm f/1.8 EX DG Asp Macro	£360/\$450	FX	None	No	Electric	f/1.8	500g	0.2m	0.34x	77mm	9	7	★★★	
<b>Sigma</b> 35mm f/1.4 DG HSM   A	£650/\$900	FX	None	No	Ultrasonic	f/1.4	665g	0.3m	0.19x	67mm	9	40	★★★★	●
<b>Voigtlander</b> 20mm f/3.5 Color-Skopar SL II	£500/\$550	FX	None	No	None	f/3.5	205g	0.2m	N/S	52mm	9			
<b>Voigtlander</b> 28mm f/2.8 Color-Skopar SL II	£400/\$530	FX	None	No	None	f/2.8	180g	0.22m	N/S	52mm	9			
<b>Voigtlander</b> 40mm f/2 Color-Ultrn SL II	£440/\$500	FX	None	No	None	f/2	200g	0.38m	N/S	52mm	9			
<b>Zeiss Distagon</b> T* 15mm f/2.8 ZF.2	£2250/\$2950	FX	None	No	None	f/2.8	730g	0.25m	0.11x	95mm	9			
<b>Zeiss Distagon</b> T* 18mm f/3.5 ZF.2	£1090/\$1400	FX	None	No	None	f/3.5	470g	0.3m	0.08x	82mm	9			
<b>Zeiss Distagon</b> T* 21mm f/2.8 ZF.2	£1450/\$1845	FX	None	No	None	f/2.8	600g	0.22m	0.2x	82mm	9			



## WIDE-ANGLE PRIMES

	Price	DX/FX	Max zoom	Stabilizer	Autofocus	Max aperture	Weight	Min focus	Magnification	Filter size	Aperture blades	Issue reviewed	Rating	Awards
<b>Zeiss Distagon T*</b> 25mm f/2 ZF.2	£1270/\$1700	FX	None	No	None	f/2	570g	0.25m	0.17x	67mm	9			
<b>Zeiss Distagon T*</b> 28mm f/2 ZF.2	£980/\$1285	FX	None	No	None	f/2	500g	0.24m	0.21x	58mm	9			
<b>Zeiss Distagon T*</b> 35mm f/1.4 ZF.2	£1450/\$1845	FX	None	No	None	f/1.4	830g	0.3m	0.2x	72mm	9			
<b>Zeiss Distagon T*</b> 35mm f/2 ZF.2	£850/\$1120	FX	None	No	None	f/2	530g	0.3m	0.19x	58mm	9			

## STANDARD PRIMES

<b>Nikon AF-S DX</b> 35mm f/1.8G	£150/\$180	DX	None	No	Ultrasonic	f/1.8	200g	0.3m	0.16x	52mm	7	28	★★★★	
<b>Nikon PC-E Micro</b> 45mm f/2.8D ED (tilt & shift)	£1395/\$2050	FX	None	No		f/2.8	740g	0.25m	0.5x	77mm	9	25	★★★★	
<b>Nikon AF</b> 50mm f/1.4D	£275/\$420	FX	None	No	Body-driven	f/1.4	230g	0.45m	0.15x	52mm	7			
<b>Nikon AF-S</b> 50mm f/1.4G	£280/\$420	FX	None	No	Ultrasonic	f/1.4	280g	0.45m	0.15x	58mm	9	40	★★★★	●
<b>Nikon AF</b> 50mm f/1.8D	£110/\$135	FX	None	No	Body-driven	f/1.8	155g	0.45m	0.15x	52mm	7	7	★★★★	●
<b>Nikon AF-S</b> 50mm f/1.8G	£150/\$220	FX	None	No	Ultrasonic	f/1.8	185g	0.45m	0.15x	58mm	7	28	★★★★	
<b>Nikon AF-S</b> 50mm f/1.8 NIKKOR (retro)	£350/\$470	FX	None	No	Ultrasonic	f/1.8	190g	0.45m	0.15x	58mm	7			
<b>Nikon AF-S</b> 58mm f/1.4G	£1300/\$1700	FX	None	No	Ultrasonic	f/1.4	385g	0.58m	0.13x	72mm	9	40	★★★★	
<b>Samyang</b> 50mm f/1.4 AS UMC	£420/\$440	FX	None	No	None	f/1.4	575g	0.45m	N/S	77mm	8			
<b>Sigma</b> 30mm f/1.4 DC HSM   A	£370/\$500	DX	None	No	Ultrasonic	f/1.4	435g	0.3m	0.15x	62mm	9	28	★★★★	
<b>Sigma</b> 50mm f/1.4 EX DG HSM	£320/\$400	FX	None	No	Ultrasonic	f/1.4	520g	0.5m	0.14x	77mm	9	28	★★★★	●
<b>Sigma</b> 50mm f/1.4 DG HSM   A	£700/\$950	FX	None	No	Ultrasonic	f/1.4	815g	0.4m	0.18x	77mm	9	40	★★★★	●
<b>Voigtlander</b> 58mm f/1.4 Color Nokton SL II	£409/\$490	FX	None	No	None	f/1.4	320g	0.45m	N/S	58mm	9			
<b>Zeiss Planar T*</b> 50mm f/1.4 ZF.2	£560/\$725	FX	None	No	None	f/1.4	330g	0.45m	0.15x	58mm	9			
<b>Zeiss Otus</b> 55mm f/1.4	£3170/\$3990	FX	None	No	None	f/1.4	970g	0.5m	0.15x	77mm	9			

## TELEPHOTO PRIMES

<b>Nikon AF-S</b> 85mm f/1.4G	£1177/\$1549	FX	None	No	Ultrasonic	f/1.4	595g	0.85m	0.12x	77mm	9	40	★★★★	
<b>Nikon AF-S</b> 85mm f/1.8G	£350/\$495	FX	None	No	Ultrasonic	f/1.8	350g	0.8m	0.12x	67mm	7	28	★★★★	●
<b>Nikon PC-E Micro</b> 85mm f/2.8D (tilt & shift)	£1300/\$1980	FX	None	No	None	f/2.8	635g	0.39m	0.5x	77mm	9	25	★★★★	
<b>Nikon AF DC</b> 105mm f/2D (defocus control)	£850/\$1200	FX	None	No	Body-driven	f/2	640g	0.9m	0.13x	72mm	9			
<b>Nikon AF DC</b> 135mm f/2D (defocus control)	£1030/\$1390	FX	None	No	Body-driven	f/2	815g	1.1m	0.14x	72mm	9	14	★★★★	
<b>Nikon AF-S</b> 200mm f/2G ED VR II	£4100/\$6000	FX	None	Yes	Ultrasonic	f/2	2930g	1.9m	0.12x	52mm <sup>(crop)</sup>	9	29	★★★★	
<b>Nikon AF-S</b> 300mm f/2.8G ED VR II	£4000/\$5900	FX	None	Yes	Ultrasonic	f/2.8	2900g	2.3m	0.16x	52mm	9	14	★★★★	
<b>Nikon AF-S</b> 300mm f/4D IF-ED	£1030/\$1490	FX	None	No	Ultrasonic	f/4	1440g	1.45m	0.27x	77mm	9			
<b>Nikon AF-S</b> 300mm f/4E PF ED VR	£1640/\$2000	FX	None	Yes	Ultrasonic	f/4	755g	1.4m	0.24x	77mm	9			
<b>Nikon AF-S</b> 400mm f/2.8E FL ED VR	£10,400/\$12,000	FX	None	Yes	Ultrasonic	f/2.8	3800g	2.6m	0.14x	405mm	9			
<b>Nikon AF-S</b> 500mm f/4G ED VR	£5850/\$8600	FX	None	Yes	Ultrasonic	f/4	3880g	4.0m	0.14x	52mm	9			
<b>Nikon AF-S</b> 600mm f/4G ED VR	£7070/\$10,300	FX	None	Yes	Ultrasonic	f/4	5060g	5.0m	0.14x	52mm	9			
<b>Nikon AF-S</b> 800mm f/5.6E FL ED VR	£13,995/\$17,900	FX	None	Yes	Ultrasonic	f/5.6	4590g	5.9m	0.15x	52mm	9			
<b>Samyang</b> 85mm f/1.4 IF MC	£305/\$289	FX	None	No	None	f/1.4	539g	1.0m	0.11x	72mm	8	40	★★★★	
<b>Samyang</b> 135mm f/2 ED UMC	£420/\$600	FX	None	No	None	f/2	830g	0.8m	N/S	77mm	9			
<b>Samyang</b> 500mm MC IF f/6.3 Mirror	£125/\$150	FX	None	No	None	f/6.3	705g	2.0m	N/S	95mm	0	8	★★	
<b>Samyang</b> 500mm MC IF f/8 Mirror	£105/\$130	FX	None	No	None	f/8	320g	1.7m	N/S	72mm	0	8	★★	
<b>Samyang</b> 800mm MC IF f/8 Mirror	£170/\$200	FX	None	No	None	f/8	870g	3.5m	N/S	30mm	0			
<b>Sigma</b> 85mm f/1.4 EX DG HSM	£650/\$970	FX	None	No	Ultrasonic	f/1.4	725g	0.85m	0.12x	77mm	9	40	★★★★	●
<b>Sigma</b> APO 300mm f/2.8 EX DG HSM	£2280/\$3400	FX	None	No	Ultrasonic	f/2.8	2400g	2.5m	0.13x	46mm	9			
<b>Sigma</b> APO 500mm f/4.5 EX DG HSM	£3760/\$5000	FX	None	No	Ultrasonic	f/4.5	3150g	4.0m	0.13x	46mm	9			
<b>Sigma</b> APO 800mm f/5.6 EX DG HSM	£4320/\$8000	FX	None	No	Ultrasonic	f/5.6	4.9kg	7.0m	0.11x	46mm	9			
<b>Zeiss Otus</b> 85mm f/1.4 ZF.2	£3250/\$4390	FX	None	No	None	f/1.4	1140g	0.8m	0.13x	86mm	9			
<b>Zeiss Planar T*</b> 85mm f/1.4 ZF.2	£990/\$1285	FX	None	No	None	f/1.4	570g	1.0m	0.1x	72mm	9			
<b>Zeiss Apo Sonnar T*</b> 135mm f/2 ZF.2	£1600/\$2125	FX	None	No	None	f/2	920g	0.8m	0.25x	77mm	9			

## MACRO

<b>Nikon AF-S DX</b> 40mm f/2.8G Micro	£185/\$250	DX	None	No	Ultrasonic	f/2.8	235g	0.16m	1.0x	52mm	7	34	★★★	
<b>Nikon AF</b> 60mm f/2.8D Micro	£370/\$520	FX	None	No	Body-driven	f/2.8	440g	0.22m	1.0x	62mm	7			
<b>Nikon AF-S</b> 60mm f/2.8G ED Micro	£370/\$600	FX	None	No	Ultrasonic	f/2.8	425g	0.19m	1.0x	62mm	9	34	★★★	
<b>Nikon AF-S DX</b> 85mm f/3.5G ED VR Micro	£375/\$530	DX	None	Yes	Ultrasonic	f/3.5	355g	0.29m	1.0x	52mm	9	34	★★★	
<b>Nikon AF-S</b> 105mm f/2.8G IF-ED VR Micro	£630/\$880	FX	None	Yes	Ultrasonic	f/2.8	750g	0.31m	1.0x	62mm	9	20	★★★★	
<b>Nikon AF</b> 200mm f/4D IF-ED Micro	£1180/\$1790	FX	None	No	Body-driven	f/4	1190g	0.5m	1.0x	62mm	9			
<b>Sigma</b> 70mm f/2.8 EX DG Macro	£360/\$450	FX	None	No	Body-driven	f/2.8	525g	0.26m	1.0x	62mm	9	20	★★	
<b>Sigma</b> 105mm f/2.8 EX DG OS HSM Macro	£390/\$670	FX	None	Yes	Ultrasonic	f/2.8	725g	0.31m	1.0x	62mm	9	34	★★★★★	●
<b>Sigma</b> APO 150mm f/2.8 EX DG OS HSM Macro	£700/\$1100	FX	None	Yes	Ultrasonic	f/2.8	1150g	0.38m	1.0x	72mm	9	20	★★★★★	
<b>Sigma</b> APO 180mm f/2.8 EX DG OS HSM Macro	£1200/\$1700	FX	None	Yes	Ultrasonic	f/2.8	1640g	0.47m	1.0x	86mm	9	14	★★★★★	
<b>Tamron</b> SP AF 60mm f/2 Di II LD (IF) Macro	£330/\$525	DX	None	No	Electric	f/2	350g	0.23m	1.0x	55mm	7	34	★★★★	
<b>Tamron</b> SP AF 90mm f/2.8 Di Macro	£370/\$500	FX	None	No	Electric	f/2.8	405g	0.29m	1.0x	55mm	9	34	★★★★	
<b>Tamron</b> SP AF 90mm f/2.8 Di Macro VC USD	£400/\$750	FX	None	Yes	Ultrasonic	f/2.8	550g	0.3m	1.0x	58mm	9	34	★★★★	
<b>Tamron</b> SP AF 180mm f/3.5 Di Macro	£700/\$740	FX	None	No	Electric	f/3.5	985g	0.47m	1.0x	72mm	7	14	★★★	
<b>Tokina</b> 100mm f/2.8 AT-X PRO Macro	£370/\$380	FX	None	No	Body-driven	f/2.8	540g	0.3m	1.0x	55mm	9	34	★★★	
<b>Zeiss Makro Planar T*</b> 50mm f/2 ZF.2	£1000/\$1450	FX	None	No	None	f/2	500g	0.24m	0.5x	67mm	9			
<b>Zeiss Makro Planar</b> 100mm f/2 T* ZF.2	£1450/\$1845	FX	None	No	None	f/2	660g	0.44m	0.5x	67mm	9			

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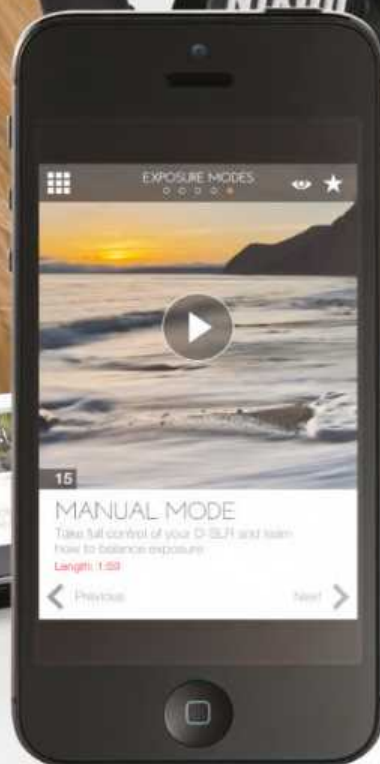
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